FACTORS CONTRIBUTING TO NURSES' POOR UTILIZATION OF HIV-RELATED POST EXPOSURE PROPHYLAXIS AT A SELECTED REGION IN SWAZILAND

by

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DECLARATION

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DECLARATION

I declare that **FACTORS CONTRIBUTING TO NURSES' POOR UTILIZATION OF HIV RELATED POST EXPOSURE PROPHYLAXIS AT A SELECTED REGION IN SWAZILAND** is my own work and all the sources that I have used, cited or quoted have been indicated and acknowledged by means of complete references, and that this work has not been submitted before for any other degree at any other institution.

MS PATIENCE N DLAMINI Dlamini **FEBRUARY 2018**

DEDICATION

This academic work is dedicated to my husband, Thandokuhle Malinga and my adorable children, Hlelisani and Siyavuya Malinga. Their collective support and love has greatly motivated me even under very challenging circumstances.

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STUDY OF FACTORS CONTRIBUTING TO NURSES' POOR UTILIZATION OF HIV-RELATED POST EXPOSURE PROPHYLAXIS AT A SELECTED REGION IN SWAZILAND

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ABSTRACT

Nurses are prone to occupational hazards while carrying out their professional duties. The HIV-related post exposure prophylaxis is recommended for health workers who prick themselves accidentally with needles that have been used on clients. The taking of antiretroviral drugs after encountering needle stick injury has been documented by medical scientists as relatively successful in preventing sero-conversion and decreasing the likelihood of contracting HIV infection. However, some of the nurses are reluctant to implement this programme and yet they have been exposed to needle stick prick.

The purpose of this study was to investigate factors contributing to nurses' poor utilization of HIV-related post exposure prophylaxis (PEP) at a selected region in Swaziland. The study was conducted in one hospital setting and one public health unit. A quantitative research design using an exploratory, descriptive cross sectional survey was used for this study. A census sample size of 200 participants was obtained from a group of nurses working in the government hospital and public health units. Using self-administered questionnaires, quantitative data was obtained and analysed using the Statistical package for social sciences (SPSS) version 23 software computer program.

The study findings revealed that though majority of nurses (65%) are knowledgeable about PEP, its importance and operational policies and guidelines, this knowledge level

was not transferred to influence the utilization of PEP as only 38% (n=75) reported utilizing PEP. Factors identified as causes of lower levels of PEP service utilization among respondents included fear of undergoing pre-prophylaxis procedures like HIV testing and counselling, and consequences thereof which include stigma, challenges of adherence and dealing with medication side effects.

Based on these findings the researcher recommends strengthening of staff development programs offered to nurses with focus on preventive measures against occupational exposure to HIV and AIDS through use of PEP. Institutional responsibility to ensure that PEP policies and guidelines are available and known by all new health personnel during induction and practicing nurses throughout their employment.

Keywords: Attitude, HIV post-exposure prophylaxis, Occupational exposure, Poor utilization, Practicing nurses, Swaziland.

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AIDS	Acquired Immune Deficiency Syndrome
ARV	Antiretroviral
CDC	Center for Disease Control and Prevention
HIV	Human Immunodeficiency Virus
3TC	Lamivudine
NACO	National AIDS Control Organization
PEP	Post Exposure Prophylaxis
TDF	Tenofovir
SPSS	Statistical Package for Social Sciences
UP	Universal Precautions
UNISA	University of South Africa
WHO	World Health Organization

CHAPTER 1
ORIENTATION TO THE STUDY

1.1 INTRODUCTION

Nurses are among health care workers who are prone to occupational hazards while in the process of carrying out their professional duties. Occupational exposure to patients' body fluids which contain blood-borne pathogens poses a significant risk to the health and safety of health care workers. Among other occupational hazards, health care workers face needle stick injuries. Most health care workers do not report occupational injuries, yet it is essential to know what you should do in the event of these injuries. Generally, health care workers assume that patients are HIV positive until proven otherwise by testing the patient.

As mentioned, occupational exposures to patients' body fluids which contain blood-borne pathogens pose a significant risk to health care workers. Such exposures could also cause anxiety among health care workers which could ultimately lead to occupational stress given the serious consequences of exposure to patients' body fluids. Many of the viral infections transmitted through these exposures have no curative management – such as HIV infection. Therefore, preventive measures are crucial and mandatory in situations where health care workers in health care settings are at high risk of exposure to patients' body fluids in their day-to-day practice. Occupational HIV infections in health care workers can be prevented by timely administration of post exposure prophylaxis (PEP) (Kumakech, Achoma, Berggren & Bajunirwe 2011:455; Baggaley, Doherty, Ball, Ford & Hirnschall 2015:1-2).

1.2 BACKGROUND TO THE RESEARCH PROBLEM

Nurses, in the midst of their provision of patient care, are at a significant risk of exposure to occupational infections in the workplace. These infections could be transmitted through various encounters such as needle pricks or cuts, blood, or other body fluid

spilling or splashing in their eyes, nostrils or mouth, and exposure to blood and/or other body fluids on their chapped or scraped skin (Makhado & Davhana-Maselesele 2016:2). Various institutional measures to minimize the infections acquired through the occupational route include strict infection control measures, such as adhering to universal precautions of proper waste disposal, the use of safety devices, and prompt management of exposures, including the use of PEP for HIV. Despite all these, a marked increase in global percutaneous exposures has been reported, with 90% of these incidents found in resource-constrained countries (WHO 2014:5).

PEP refers to the immediate provision of medication or antiretroviral therapy (ARV) following occupational exposure to a high risk HIV situation with potentially infected blood or other body fluids as a result of an injury with a needle or any other sharp instrument, or via mucous membranes or an existing cutaneous condition (WHO 2014:2). According to the National AIDS Control Organization (NACO) (2009:1), certain processes should be followed immediately after exposure. These include first aid, counselling, risk assessment, relevant laboratory investigations with the consent of the exposed individual and source, followed by provision of a short course of ART for 28 days, and monitoring thereof.

PEP has been proven to be effective in the prevention of approximately 81% of sero-conversion and is thus the only means of reducing the risk of HIV infections after exposure. Its efficacy is reportedly high when instituted within 72 hours of exposure (Kumakech et al 2011:455; WHO 2014:2). It may take 3 days from exposure for the virus to be detected in the lymph nodes, and up to 5 days in the blood. This offers a short window of opportunity during which HIV acquisition following exposure can be prevented through PEP. PEP inhibits viral replication and stops the irreversible establishment of the infection (Aminde, Takah, Noubiap, Tindong, Ngwasiri, Jingi, Kengne & Dzudie 2015:2). However, several factors have been implicated in its failure to reduce these infections. Empirical evidence points to situations where there are delays in treatment initiation, and non-adherence through defaulting treatment and a lack of knowledge

among health care workers on the use of PEP. This significantly limits its effectiveness (Sultan, Benn & Waters 2014:150; Mponela, Kwesigabo, Oleribe & Abade 2015:3).

Various studies reveal that many health care workers fail to report the occurrence of an HIV occupational exposure incident. Among their reasons is their fear of being stigmatized as co-workers may question whether one was HIV positive before or after the incident. There is also the fear of PEP medication side effects (Kumakech et al 2011:459; Mponela et al 2015:3; Tetteh, Nartey, Lartey, Mantel-Teeuwisse, Leufkens, Nortey & Dodoo 2015:545). Even though universal precaution measures have been shown to significantly reduce health care workers' occupational exposure, several reports (including the above) from both developed and developing countries showed a continued high prevalence of needle stick injuries, cut injuries, splashes of patients' body fluids, and related infections including HIV.

In developing countries some of the causes of health care workers' low PEP uptake included being ignorant about occupational exposures and the management thereof, lack of protection for workers, lack of reporting policies, and the likely absence of PEP programmes in the health institutions (Tesfaye, Gebeyehu & Likisa 2014:468; Ajibola, Akinbani, Elikwu, Odensanya & Uche 2014:4). Some health care workers reported barely knowing what drugs are used for HIV-related PEP. Thus, having a high knowledge on PEP is said to be a contributing factor for its use.

Despite the standard universal precautionary guidelines being put into place in institutions of care and information sessions through workshops and seminars for health care workers, occupational exposures to HIV and AIDS continue to pose a risk for nurses and negatively impact on their health (Makhado & Davhana-Maselesele 2016:2). This is therefore reflected in poor or inadequate utilization of PEP. For instance, statistics from Mbabane Government Hospital (2015:5) have indicated that approximately 8 nurses experience accidental occupational injuries per month and only 20% (n=2) choose to undergo preliminary HIV testing, thus resulting in nurses not employing PEP. It is

therefore deemed critical to investigate factors contributing to nurses' poor utilization of HIV-related PEP in Swaziland.

1.3 STATEMENT OF THE RESEARCH PROBLEM

Without PEP, the risk of infection for susceptible workers after a needle stick injury is 23-62% for the hepatitis B. virus, and approximately 2.5% for HIV infection (WHO 2014:5). Most of these cases are as a result of exposure to risky conditions such as body fluids coming into contact with mucus membranes, and needle stick injuries (South African HIV Clinicians Society Nursing Magazine 2011:26; WHO 2014:5). As alluded to in the preliminary literature reviews on occupational exposure and the use of PEP by health care workers, it has come to the researcher's attention that even in her workplace a number of nurses have been exposed to potentially infectious body fluids, and most do not follow PEP (Ministry of Health 2015:5). There is limited PEP usage as reflected in Swaziland's government hospital statistical evidence on the uptake of PEP (Ministry of Health 2015:5). Some who request PEP, refuse to do the HIV pre-testing as stipulated in the PEP guidelines.

With escalating HIV/AIDS infections and shortages of nurses in the country, the number of occupational exposures to HIV infections without PEP poses a serious threat to the health care services. Therefore, identifying factors contributing to nurses' poor utilization of HIV-related PEP is an attempt to find ways of minimising the infections by dealing with or curbing those factors that act as barriers to PEP utilization by nurses.

1.4 RESEARCH PURPOSE

In this study, the researcher aimed to investigate contributing factors to nurses' poor utilization of HIV-related PEP in order to promote the wellbeing of health professionals in the workplace.

1.5 RESEARCH OBJECTIVES

The objectives of the study were:

- to explore and describe the attitudes of nurses towards the utilization of HIV-related PEP;
- to determine the nurses' knowledge about HIV-related PEP; and
- to explore factors contributing to nurses' poor utilization of HIV-related PEP.

1.6 RESEARCH QUESTIONS/HYPOTHESES

This study attempted to answer the following research questions:

- What are the attitudes of nurses towards HIV-related PEP?
- What do nurses know about HIV-related PEP?
- What are the factors contributing to nurses' poor utilization of HIV-related PEP?

1.7 SIGNIFICANCE OF THE STUDY

The findings of this study will be shared with the Swaziland Nurses Association as the body that is concerned with the social and economic welfare of nurses in Swaziland. Thus, efforts will be made in the form of education to encourage nurses to utilize PEP. Because the study focused on nurses, the findings can help the nurses to realize the importance of PEP services in preventing HIV infections in the clinical area. It was also hoped that information obtained from the study would be used by health care providers to identify strategies to lessen the impact of HIV and AIDS among nurses.

The findings will be shared with the two health facilities used to conduct the study in the hope to change the attitudes of nurses towards the uptake of PEP. It is thus foreseen that the findings could be used to design and implement preventive programmes to reduce occupational exposures among health care workers, and prevent the resulting injuries and other related health and safety effects.

1.8 DEFINITIONS OF KEY CONCEPTS

The key terms of the study are defined here.

- **Attitude** refers to the way one thinks and feels about somebody or something (Hornby 2010:80). In this study, attitudes relate to how nurses think or feel about the utilization of PEP which involves counselling for HIV, and taking ARV treatment.

- **Knowledge** denotes the state of knowing about a particular fact or situation (Hornby 2010:827). In this study, knowledge refers to the information or understanding that the nurses have about PEP.

- **Factors** mean one of several things that cause or influence something (Hornby 2010:526). In this study, a factor refers to things that influence the nurses not to use PEP after being exposed to any occupational injury.

- **HIV** is an acronym for the human immunodeficiency virus which attacks a person's immune system by destroying the vital cells that fight disease (Lyan's World 2012:1).

- **HIV testing and counselling** is a confidential dialogue between a person and a health care provider aimed at enabling the person to cope with stress and make informed personal decisions relating to HIV/AIDS testing (Lyan's World 2012:1). In this study, HIV testing and counselling refers to a confidential conversation between the nurse

and a trained person to help the nurse make informed decisions relating to HIV testing after occupational exposure, prior to initiating HIV-related PEP.

- **Needle prick** is defined as a puncture or cut through the skin with a sharp contaminated object or injecting needle (WHO 2014:1).

- **Health Care Worker** refers to a person whose activities involve contact with patients or with blood or other body fluids from patients in the healthcare settings (Centers for Disease Control and Prevention (CDC) 2016:36). In the present study, health care workers refer to nurses, including nursing assistants, general nurses, midwives, and degreed nurses.

- **Nurse:** According to the Swaziland Nursing Act (2005:4), a nurse is a licensed practicing person qualified as a nurse, authorized by the Swaziland Nursing Council, who is employed in any health facility in Swaziland. She/he can either be a professional nurse, midwife, staff nurse, and/or an auxiliary nurse. In this study, the term refers to all licensed practicing nurses who are employed in either a hospital or public health unit in the selected region in Swaziland.

- **Occupational exposure** is defined by the WHO (2014:1) as an incident where an uninfected person, for example, a health care worker, accidentally comes into contact with blood or body fluids from an infected person in a manner that can result in the infection being transferred. In this study, occupational exposure is used accordingly.

- **Post Exposure Prophylaxis (PEP)** is the immediate intervention through the use of ARV treatment that is meant to minimize the risk for the health care worker, a victim of sexual assault, or a public worker to get infected with HIV after potential exposure (WHO 2014:2).

1.8.1 Operational definitions

The operational definitions used in the study are:

- An **independent variable** is a stimulus or activity that is manipulated or varied by the researcher to create an effect on the dependent variable (Burns & Grove 2011:176). In this study's perspective the independent variable was the:
  - **Utilization and adherence to PEP** which entail full compliance with the protocol on the uptake of PEP such as reporting, undergoing HIV testing and counselling, and initiation of ARV treatment immediately after occupational exposure, leading to completion of the ARV treatment course within 28 days. This was assessed using questions on participants' utilization of and adherence to PEP.

- A **dependent variable** is an outcome or response that the researcher wants to predict or explain (Burns & Grove 2011:176). In this study's perspective, the following were dependent variables.
  - **Knowledge and attitudes** towards PEP refer to the beliefs in and understanding the importance of following all the procedures after occupational exposure towards full utilization of the PEP. This was assessed based on the question of knowledge, with yes/no answers, and questions of attitudes with "agree", "disagree" and "I don't know".

1.9 RESEARCH DESIGN AND METHODS

A quantitative research design using an exploratory, descriptive, cross-sectional survey was undertaken. A quantitative design, according to Burns and Grove (2011:34), is applicable for phenomena that lend themselves to precise measurement and quantification, and often involve a rigorous and controlled design. Both public hospital and health clinic staff of the selected region in Swaziland were recruited to participate in the study. Using quantitative self-reports, the survey facilitated information collection at

the same time from the same participants. Through a census sample of the study population, the researcher explored and identified factors contributing to poor PEP utilization. A full detailed description is offered in Chapter 3.

1.10 ETHICAL CONSIDERATIONS

The study was conducted within the universal ethical principles of respect for persons, beneficence, non-maleficence, and justice. Also considered were the ethical guidelines for postgraduate research prescribed by the University of South Africa (UNISA). Participation in the study was voluntary, and the researcher ensured that the respondents were fully informed about the study. Respondents were requested to sign a consent form which was attached to the questionnaire. The consent form contained information about the purpose and the scope of the study, the respondents' benefits for participating in the study, and their right to withdraw if they wished. Each respondent was requested to sign the consent form and return it with the completed questionnaire (see Annexure E). The questionnaires did not contain any information that could be traced back to the respondents. Respondents were assured that should they refuse to participate in the study, there were no adverse consequences for them.

This study did not have any potential for physical, mental, or social harm to the respondents. However, the researcher structured the questionnaire in a manner that was not harmful to the respondents. The returned questionnaires were locked away by the researcher and no individual names or identifying mechanisms were used in the report.

The consent form included the researcher and the supervisor's contact details, and respondents were encouraged to contact either of them for any additional information regarding the study. After obtaining ethical approval from the Higher Degrees Ethics Committee of the Department of Health Studies, UNISA, the researcher attached the approved research proposal and applied for permission to conduct the study from the Swaziland Ministry of Health, and the hospital and public health unit managers in the

selected region in Swaziland (see Annexure C). After all permissions were granted, the researcher visited the hospital and public health unit to negotiate respondents' consents to participate, and thereafter proceeded with data collection.

1.11 SCOPE AND LIMITATIONS OF THE STUDY

The study focus was on exploring factors contributing to poor utilization of PEP by practicing nurses in a Swaziland context. Although it is limited to one region in the Swaziland, the findings may not be applicable to all regions.

Limitations, as described by Burns and Grove (2011:48), are restrictions in the study that may affect the credibility and generalizability of the findings. This study was conducted in one selected region in Swaziland, using a census sample, and thus results cannot be generalized to the whole country.

1.12 STRUCTURE OF THE THESIS

The thesis is divided and organized into the following five chapters:

Chapter 1: Orientation to the study

This chapter provides an overview of the entire study and highlights the background to the study by describing the statement of the research problem, research purpose, and questions. It mentions the ethical considerations, scope and limitations of the study, and offers a conclusion.

Chapter 2: Literature review

This chapter covers relevant literature that has been reviewed to give a background to this study. In this section, the review of the current situation on HIV-related PEP among health care workers is described. It covers information on HIV in the workplace, occupational exposure to HIV, and HIV-related PEP. Other aspects that are discussed include WHO practices/protocols on PEP, guidelines on PEP, challenges with the use

of PEP, and empirical evidence on the use of PEP. A conclusion of the discussion in the chapter is given.

Chapter 3: Research design and methodology

The chapter presents the research design that was used and the methodology followed in terms of sampling and sample selection, data collection – including the approach, development and characteristics of the data collection tool – and data analysis. Ethical considerations pertaining to collected sampling data are highlighted. It also gives an account of measures taken to improve the validity and reliability of the study.

Chapter 4: Data Analysis and presentation of the research findings

Chapter 4 offers the analysis, presentation and description of the research findings.

Chapter 5: Discussion of the findings, conclusion, recommendations and limitations of the study

This chapter presents conclusions generated in line with the research objectives and the statement of the problem, it offers limitations, and makes recommendations based on the findings.

1.13 CONCLUSION

This chapter gives the overall background of the study and highlights the prevalence of occupational exposure to HIV and the utilization of PEP among health care workers. The statement of the research problem, and the study purpose and objectives has been described, as well as the significance of the study. The research design and methodology, and ethical considerations have been briefly described.

CHAPTER 2
LITERATURE REVIEW

2.1 INTRODUCTION

This chapter presents relevant literature that has been identified, reviewed and synthesized with regard to the current situation of HIV-related PEP among health care workers. According to Burns and Grove (2011:541), literature reviews allow the researcher to see what is already known about the phenomenon under study, and also to determine the proper methods and research instrument to use in the current study. To prepare the literature review for this study, the following key concepts were used to search in various electronic databases such as electronic journals, theses and dissertations: post exposure prophylaxis, needle prick injuries, adherence to PEP, and the utilization of PEP.

2.2 HIV IN THE WORKPLACE

After any occupational exposure to HIV, the health care worker should immediately receive PEP with at least two drugs (Barclay 2013:875-982). Preventing exposures should be the leading strategy to avoid occupational HIV infections. However, if occupational exposure occurs, it should be considered an urgent medical concern and the PEP regimen should be started right away.

2.3 OCCUPATIONAL EXPOSURE

Occupational exposure is an incident where an uninfected person, for example a health care worker, accidentally comes into contact with blood or body fluids derived from an

infected person in a manner that can result in the infection being transmitted (WHO 2014:1). Types of occupational exposures involve percutaneous injury and non-percutaneous injury.

Percutaneous injury occurs when there is a puncture or cut through the skin with a sharp contaminated object, like needle stick injuries. A non-percutaneous injury involves the mucus membrane coming into contact with blood and body fluids, semen or vaginal secretions. Occupational exposure through needle stick injury is inevitable regardless of how careful one may be. Percutaneous injury, usually inflicted by a hollow bore needle, is the most common manner of occupational HIV transmission.

2.3.1 Occupational exposure in the global context

According to Tetteh, Nartey, Lartey, Mantel-Teeuwisse, Leufkens, Nortey and Dodoo (2015:544), the WHO estimates that roughly 3 million health care workers across the world are exposed to blood-borne pathogens each year. These injuries may result in the transmission of the hepatitis B virus and the HIV virus. It is worth noting that while 90% of occupational exposures occur in the developing world, 90% of the reports of occupational infections occur in the United States and Europe. There is clearly underreporting of occupational exposures in the developing countries, probably because of ignorance about occupational exposures (Tetteh et al 2015:544).

2.3.2 Occupational exposure in the Sub-Saharan region

Most people at risk of occupational exposures are in developing countries where there is a standard reporting protocol (Ajibola et al 2014:1). Some causes of occupational exposure include the lack of sharps disposal containers, recapping of needles after use, and failure to use gloves, among other things. Reporting among those who had suffered needle sticks is poor. Some of the reasons for not reporting were that they were not aware of whom to report the incident to. Thirty-four-point-five percent (34.5%) of the respondents said they were using a new needle, so there was no need to report. The

same findings were reported by Matthews, Birhan, Kinfe, Boru, Tiruneh, Addis and Alemu (2013:2), who also conducted a cross-sectional study. The purpose of their study was to determine the knowledge, attitude, and practices of health care workers towards PEP for HIV. A population of 195 health care workers was used. The findings revealed that developing countries are at serious risk of infection from blood-borne pathogens like HIV, hepatitis B or hepatitis C viruses because of the high prevalence and increased occupational risk of these pathogens in the areas.

Hadadi, Karbakhsh, Rasoolinejad, Abdolbaghi, Hadadi, Afhami and Bazzah (2013:195-198) conducted a surveillance system programme to assess PEP against hepatitis B virus and HIV infection in health care workers. The results showed that most of the exposures had occurred among nurses (35%) since nurses have frequent contact with patients.

Desta-Atlaw (2013:14) wrote a thesis on the patterns of occupational exposure to patients' body fluids among health care workers and reported that most of the exposures that were reported, was during participants' internship years. Some of their reasons for not reporting were that they were busy and perhaps the exposures were not significant. Also, health care workers working on night shift have a 7.2 times greater risk of sustaining accidental exposures compared to health care workers working during the day shift.

2.3.3 Occupational exposure in Swaziland

In Swaziland, there is limited reliable data relating to the incidence of body fluid exposures or needle stick injuries among health care workers. This may be due to poor reporting of the instances of occupational exposure. Swaziland has a higher rate of HIV prevalence than anywhere else in the world, with just over a quarter of adults between 15 and 49 years of age living with the virus. In the Sub-Saharan region, the country has a high HIV incidence of 3%, with a prevalence of 41.1% among pregnant women

(UNAIDS 2013:5; Swaziland Government 2009-2014:19). This report thus shows that nurses are at a significant risk of acquiring HIV while carrying out their duties.

Many studies have been conducted among different groups of health care workers, including student nurses in various countries. Standard precautions are put in place, including initiating PEP. These interventions include hospital staff receiving training on infection prevention and the provision of protective barriers such as gloves and gowns, and correct disposal of sharps, body fluids, and other clinical wastes. Despite these efforts, a considerable number of occupational exposures still occur among health care workers at government hospitals in Swaziland.

2.4 HIV-RELATED POST EXPOSURE PROPHYLAXIS

PEP can reduce, but not eliminate, a person's risk of HIV infection. Therefore, it should begin as soon as possible as it may be less effective if started more than 72 hours after exposure. PEP, which involves the administration of ARV drugs, has been estimated to reduce HIV infection by approximately 81%, but it is most effective within 1-2 hours of exposure and not more than 72 hours after exposure (Tetteh et al 2015:544). A basic 4 weeks, two- or three-drug regimen is recommended, starting as soon as possible within 72 hours after exposure. An example of a two-drug regimen is Tenofovir (TDF) 300 mg daily, and Lamivudine (3TC) 300 mg daily. A three-drug regimen used is Tenofovir (TDF) 300 mg daily, Lamivudine (3TC) 300 mg daily, and Kaletra 400mg/100mg twice a day.

2.5 PRACTICES/ PROTOCOLS ON PEP

The CDC (2016:2-3) recommends the proper use of safety devices and barriers to prevent exposure to HIV in the health care setting, such as goggles, aprons and gloves. Upon contact with body fluids, the affected health care worker should immediately clean exposed surfaces with soap and water. Both the health care worker and the supervisor should go to the occupational health clinic or HIV/AIDS clinic if available. The matter should be reported to the hospital executive director who will then notify the hospital

administrator of the incident and make a follow-up investigation. Approximately 2.3 of every 100 such injuries will result in infection. A global estimate of 4% of HIV infections in health care workers is due to occupational exposures. These practices also apply to the health care workers in Swaziland.

2.6 WHO GUIDELINES ON PEP

All health care facilities should have guidelines for the management of occupational exposures to HIV and recommendations for PEP. The CDC guidelines outline considerations in determining whether health care workers should receive PEP after possible exposure to reduce the chance of infection with HIV. Health care workers should assume that body fluid from all patients is potentially infectious. Infection control precautions should be followed at all times. Routinely using barriers such as gloves, aprons and goggles when anticipating contact with blood or body fluids, is recommended. It is also recommended to immediately wash the hands and other skin surfaces after contact with blood and other body fluids. Proper handling of and disposal of sharp instruments during and after use is critical. There should be appropriate management of health care workers' exposures. PEP management of health care workers should be in place in all health care facilities. PEP should be considered an urgent medical concern and should be managed immediately after exposure. A basic 4 weeks, two- or three-drug regimen is recommended, starting as soon as possible within 72 hours after exposure.

2.7 GUIDELINES AND POLICY FOR THE MBABANE GOVERNMENT HOSPITAL ON POST EXPOSURE PROPHYLAXIS

In the present situation, a number of interventions have been put in place in Swaziland to reduce the frequency of occupational exposure of body fluids, such as proper disposal of needles and staff training on infection control. Once a heath care worker or nurse sustains an injury or is exposed to HIV while carrying out his/her duties, the following must be done:

- Immediately wash the injured area with running water and if the mucus membrane is splashed, flush with a lot of water.

- Report the incident to the supervisor in charge.

- Assess the injured health worker's risk for infection following exposure.

- If possible, determine the HIV status of the source-patient following counselling, and get the patient's consent.

- If the health care worker is willing to take PEP, do an HIV test as soon as possible. This goes hand in hand with proper counselling and emotional support.

- Provide the health care worker with the PEP drug regimen if the HIV status is negative.

- Follow-up HIV testing and counselling should take place for at least 6 months.

- Report exposure to authorities in charge. There should be a written policy for the management of exposures.

- Monitor the effects of PEP.

2.8 CHALLENGES WITH PEP USE

2.8.1 In developed and developing countries

Needle stick injuries are usually inflicted by a hollow bore needle, and is the most common method of occupational HIV transmission. The use of PEP among health care workers in developing countries was reported to be low compared to developed countries. The CDC (2016:2-3) estimates that more than 380 000 needle stick injuries

occur in hospitals each year, and the WHO estimates that 2.5% of HIV cases among health care workers worldwide are the results of occupational exposure (Ajibola et al 2014:2).

There is also less reporting of occupational exposures which contribute to the poor utilization of PEP. Fear of HIV testing among health care workers is another challenge experienced with the PEP system. A primary reason given for not using PEP was the severe side effects reported, even to the extent of stopping the prophylaxis before completion.

A number of studies reviewed showed that there is poor or non-adherence of health care workers to the prophylaxis. A study by Blashill, Elhlinger, Mayer and Safren (2015:1-3), which aimed to optimize adherence to pre-exposure prophylaxis and PEP, found the low level of adherence to PEP may reduce the effectiveness of the intervention and may also jeopardize its cost effectiveness. The low levels of adherence were reported to be ranging between 38% - 54%. PEP adherence counselling may be most helpful for individuals with high levels of HIV risk behaviors.

2.8.2 Challenges with PEP use in Swaziland

There is a high prevalence of occupational exposure which is attributed to failure to use universal precautions and inadequate supplies of protective equipment such as gloves and disposable containers for sharps. In cases of shortage, nurses are expected to improvise with the available equipment which, in turn, puts their lives at risk.

Low reporting of occupational exposure has also been established. The primary reasons for not reporting the injury is fear of testing HIV positive; the process is too time consuming; low transmission risk; the accident reporting form is too complicated; nothing useful can be done following exposure; and fear of humiliation. The researcher observed that while there is poor utilization of the prophylaxis by nurses in Swaziland, not much

research has been conducted on PEP in the country. Thus, this study was deemed appropriate and necessary.

2.9 EMPIRICAL EVIDENCE ON THE USE OF PEP

Every day, while caring for patients, nurses are at risk of exposure to blood-borne pathogens resulting in infections such as HIV. Their job demands a caring role, bringing them in direct and close contact with the patients' body fluids and blood, putting them at a significant risk of occupational exposure to HIV/AIDS and other infections. Health care workers' knowledge of PEP has been investigated by a number of researchers. The majority used cross-sectional survey approaches. Most of the health care workers had some knowledge on PEP. Their occupational health needs deserved special attention, especially in this era of HIV infection. Lamichanne, Aryal and Dhakal (2012:1398) and Saoud, Elsour, Elbargathi, Marzok and Ali (2013:319) reported that the risk for transmission after exposure to fluids or tissues other than HIV-infected blood has not been quantified but is probably considerably lower (0.09%) than for blood exposures. On the practice of PEP, only half of the nurses reported having opted to go for PEP as soon as possible after accidental exposure. This result indicates that there was inadequate use of PEP.

On another note, although the health care workers had some knowledge about hospital acquired infections with blood as the source, there were gaps on their knowledge about HIV infection. Nurses were viewed to have insufficient knowledge about HIV and its prognosis. Doctors perceived PEP after 72 hours to be a reasonable practice. However, for nurses the primary source of information was ward rounds, and only 6.5% reported having received PEP training. These findings reveal that there is a knowledge deficit on PEP.

Additionally, more than 5% of exposures occurred among the health care workers with less than 5 years' experience, especially during the first 2 years of work due to

inexperience. Therefore, having less experience could mean more chances of being exposed. It could be caused by the fact that more experience leads people to become more cautious when performing potentially dangerous tasks. Most exposures were caused by needle sticks when taking blood samples or performing similar procedures. Continued nursing education sessions or refresher clinical skills courses for health care workers and students are therefore recommended. Furthermore, those who were exposed did not use the PEP, and it is thus of great importance for nurses to have adequate knowledge on how they can protect themselves.

A cross-sectional survey was carried out by Singh, Anmad, Muneer, Sabah, Baig and Khan (2015:2-3) to assess the knowledge, attitudes and practices of health care workers in regards to PEP for HIV. The population of the study was a sample of 531 health care workers. The findings revealed that the health care workers did not consider the importance of PEP or did not have any knowledge of PEP as there were no developed policies in a written or verbal form. There was also inadequate knowledge of PEP due to lack of proper protocols and guidelines. Proper disposal of used needles and other equipment capable of HIV transmission was not practiced. In-service education was needed to teach the health care workers PEP guidelines.

Matthews et al (2013:2) conducted a cross-sectional study whereby they reported that their respondents had unfavorable attitudes towards PEP; a negative attitude took the upper hand towards PEP. Most of the respondents felt that HIV-positive patients needed to be treated separately from other patients, since it was thought they behaved immorally and that they deserved such a disease. The negative perception of the health care workers may have been associated with their lack of knowledge on the prophylaxis, thus resulting in poor utilization of HIV-related PEP.

These findings were different from those of Ajibola et al (2014:6-7), who reported that their study respondents had a positive attitude towards PEP, since about 219 (73%) accepted to use PEP if the need arises after occupational exposure. There was a

decrease in the occurrence of needle stick injuries due to the provision of comprehensive universal precaution packages, and improved disposal of sharps in the hospital.

This study is concurrent with the one conducted by Katsinde and Katsande (2012:6) which assessed the knowledge, attitudes and practices of student nurses about PEP in HIV and AIDS prevention. Their respondents had a positive attitude towards PEP; all respondents (30) agreed that it was wise to use PEP following accidental exposure. Still, Katsinde and Katsande (2012:6) reported that some of the respondents had a fear that their workmates would discriminate against them if it was known that they had been exposed to HIV and had to use PEP.

Nursing students have a high risk of occupational exposure to blood-borne infections because they may have insufficient background knowledge to recognize the level of threat posed by a particular patient and their inexperience with procedural skills and infection control procedures. In a study conducted by Hadadi et al (2013:198), 75% of exposures had occurred among health care workers with less than 5 years' work experience; in other words, less experience means more chances of being exposed. It is probable that more experience makes people more cautious when performing potentially dangerous tasks. Most exposures had occurred during the first two years, because of their inexperience or high workload. Universal precautions, and in particular infection prevention and control, needed to be emphasized to reduce the occurrence of needle stick injuries among nursing students.

A number of studies reviewed showed health care workers' poor or non-adherence to the prophylaxis. A study done by Blashill et al (2015:1-3), which aimed to optimize adherence to pre-exposure prophylaxis and PEP, revealed that the adherence to ARV therapy regimens remains necessary for optimising the effectiveness of the drugs.

These studies all agree that there was little or no utilization of HIV-related PEP. There is a need to ascertain the reasons for not utilizing the prophylaxis so as to equip health care workers with the necessary information on HIV-related PEP.

2.10 CONCLUSION

The literature reviewed on health care workers' knowledge, attitudes, perceptions, and utilization of HIV-related PEP revealed that cross-sectional survey approaches were used in most of the studies. The studies showed that there is a high rate of occupational exposure in the different health care facilities. There is a significant low reporting of exposures which is associated with low use of PEP, which is what the researcher also observed in Swaziland. There is still a knowledge gap on PEP, thus the researcher also wished to discover the factors that contribute to the nurses' poor utilization of HIV-related PEP at a selected region in Swaziland. The findings will be used to develop policies and guidelines with regards to PEP.

CHAPTER 3
RESEARCH DESIGN AND METHODOLOGY

3.1 INTRODUCTION

This chapter discusses the research design and methodology used to conduct an investigation into the factors contributing to nurses' poor utilization of HIV-related PEP at a selected region in Swaziland. The discussion includes the overall planning, structuring and execution of research with emphasis on the actual research process, the research design, study population, sampling method and rationale, as well as the setting in which the study was conducted. Data collection methods and analysis, together with measures of reliability, validity, and ethical considerations applicable in this study, are also discussed.

3.2 STUDY OBJECTIVES

As mentioned in Chapter 1, the objectives of the study were:

- to explore and describe the attitudes of nurses towards the utilization of HIV-related PEP;
- to determine the nurses' knowledge about HIV-related PEP; and
- to explore factors contributing to nurses' poor utilization of HIV-related PEP.

3.3 RESEARCH DESIGN

A quantitative research design using an exploratory, descriptive, cross-sectional survey was used in the study. A quantitative design, as defined by Burns and Grove (2011:20), is the formal, objective, rigorous, systematic, process in which numerical data are used to obtain information about the world. It is a design applicable to phenomena that lend themselves to precise measurement and quantification such as the measurable aspect of human behavior, descriptions of new situations, events, or concepts. As it involves a rigorous and controlled design, its goal is to describe trends or explain the relationship between variables (Burns & Grove 2011:34). The researcher assumed that there were reasons for nurses' poor utilization of HIV-related PEP after occupational exposure to HIV. Based on these premises, the researcher sought to determine what factors contribute to such behaviors by the nurses.

The cross-sectional survey used in the study enabled the researcher to collect information at the same time from the same participants. A cross-sectional study is noncurrent in nature, as it is done at a specific point in time (Brink, van der Walt & van Rensburg 2012:110). Respondents' self-report was used to explore and identify factors contributing to nurses' poor utilization of PEP using an exploratory design, and to find out why nurses are reluctant to use HIV-related PEP. Furthermore, in this study a cross-sectional design was selected for its advantage of being relatively less time consuming, less costly, it is easy to apply in quantitative approaches, and for its accurateness in collecting data for the phenomenon under study (Brink et al 2012:115).

3.3.1 Exploration

Exploration refers to gaining familiarity with a phenomenon or achieving new insights into a phenomenon, situation, individual or community when little is known about the phenomenon (Kothari 2009:15). As the study purpose was to gain new insights, exploring why nurses are reluctant to use the HIV-related PEP was essential. Kothari (2009:15) further asserts that through exploration, research brings to light how and why people behave the way they do; the major emphasis being on the discovery of ideas

and insights. In this study, the researcher explored why some nurses were reluctant to use HIV-related PEP.

3.3.2 Description

According to Burns and Grove (2011:256), a descriptive design involves the systematic collection and presentation of data to give a clear picture of a situation. The purpose of the description is to gain more information about characteristics of particular individuals, situations, or groups within a particular field of study, to discover new meaning, describe what exists, determine the frequency with which something occurs, and categorize information (Burns & Grove 2011:34). In order to determine the nurses' knowledge and attitudes towards PEP, and to discover the current practices in cases of occupational exposure, a detailed and accurate description of the perspectives of the nurses towards the use of HIV-related PEP was provided. Furthermore, the researcher was then able to describe factors related to the uptake of the HIV-related PEP by nurses to obtain a clear picture of the situation.

3.4 RESEARCH METHODOLOGY

3.4.1 The study setting

The setting of the study refers to the locations and conditions in which the data collection takes place when conducting the research (Burns & Grove 2011:40). The study took place at a selected region in Swaziland. Swaziland is located in the southern part of Africa and consists of four administrative regions. A public hospital with a staff establishment of approximately 250 nurses, and a public health unit with 25 practicing nurses in the selected region in Swaziland, was used. The researcher chose a government hospital because it is a large and busy hospital with a large population of patients with HIV infections, and has many nurses working there. The hospital is a referral center for all the hospitals in Swaziland. It also serves as a teaching hospital for the University of Swaziland's Faculty of Health Sciences. The public health unit is also

big and offers comprehensive services such as preventive and curative treatment. Both health facilities are situated in an urban area.

3.4.2 Population

The population of the study is a particular group of persons, elements or objects that are of interest to the researcher and about which the researcher wishes to gather information and draw conclusions (Burns & Grove 2011:290). In this study, practicing nurses who were employed in either a hospital or public health unit in one region in Swaziland were the target population.

3.4.3 Sample and sampling methods

A sample is a subset of the population that is selected for a particular study, and the members of a sample are the subjects or participants (Burns & Grove 2011:51). Given the manageable staff establishment of nurses in the two settings (roughly 250 and 25 nurses, respectively) no sampling was done. A census sample was used, meaning the entire accessible population was included in the study and thus contributed to the maximum sample size for the study. Census sampling entails a complete enumeration of all items in the population. It can be presumed that all the items are covered, no element of chance is left, and accuracy is obtained. However, according to Kothari (2009:58), it is not always possible to examine every item in the population. A census sample requires a lot of time and energy. The participants selected should be a representation of the total population in order to produce a miniature cross-section. Because of the minimum population number of nurses in the selected research site, the researcher recruited all nurses who were found to be on duty in the hospital and public health unit to participate in the study.

3.4.4 Eligibility criteria

The sampling criteria, also known as the eligibility criteria, refer to the list of characteristics essential for eligibility or membership in the target population (Burns &

Grove 2011:291). Since the entire accessible population was included in this study and thus contributed to the maximum sample size for the study, there was no need to have eligibility criteria.

3.4.5 The sample size

The sample size is the number of elements, such as people or objects, that are included and from whom data are collected (Burns & Grove 2011:308). The final sample size is usually a compromise between what is desirable and what is feasible. In this study, the size was determined by the number of nurses who were on duty at the time of data collection who were willing to participate in the study.

3.4.6 Data collection methods and procedures

Data collection is the precise, systematic gathering of information relevant to the research purpose, objectives, and questions of a study in order to address the research problem (Burns & Grove 2011:52). Quantitative research uses various data collection methods such as questionnaires, interviews, or scales (Burns & Grove 2011:52). According to Houser (2012:229), quantitative data collection tools ensure that the researcher gathers a broad-spectrum of information from participants, such as facts about the subject, or facts about the persons, events or situation about the subject. These data collection tools can also be used to gather information about beliefs, attitudes, opinions, or knowledge about the subject (Burns & Grove 2011:353). One of the advantages of a self-administered questionnaire is that it is less expensive and does not require research assistants. In this study, a self-administered questionnaire was used to collect data from the participating respondents.

3.4.6.1 Pilot testing

A pilot-test refers to a small-scale trial of a particular research component, usually the data collecting tool (Houser 2012:306). The purpose of piloting is to test the research

tool and identify any problems in the tool as these problems may jeopardize the results. If there are any faults, they are rectified before using the tool in the main study. It is also done to estimate how long it takes to complete the questionnaire. After receiving permission from the Swaziland Ministry of Health and the hospital and public health unit managers, which was also used in the main study, the researcher then proceeded with piloting the tool. The researcher distributed the questionnaire to 10 respondents to complete, and the questionnaires were collected the following day. Thereafter, the researcher had enough time to revise and modify the tool. Language and other problems encountered would have been corrected prior to the execution of the main study. No amendment was performed on the questionnaire. The data collected was analysed separately and results were reported in the main study.

- **Data collection instrument**

A self-designed questionnaire was used as the study's data collection instrument. Through extensive literature reviews, questions in the tool were derived and modified from literature about the topic and from adapted question items used in related studies about HIV-related PEP (Aminde et al 2015:2-6; Kumakech et al 2011:456; Makhado & Davhana-Maselesele 2016:3-4). The self-administered questionnaire was organized into four parts. Part A comprised of the biographic data of the respondents which included age, sex, qualifications, and years of experience in order to see if the utilization of the HIV-related PEP was affected by the mentioned demographic data. Part B sought to address the first objective, and had questions about aspects related to knowledge about PEP, while Part C had questions about nurses' attitudes towards PEP, which explored the nurses' perceptions, opinions and practices, such as concern about blood-borne infections, beliefs about avoiding exposures, and the risks of HIV. Part C thus addresses the first and second objective. Lastly, Part D focused on whether the nurses were aware of preventive practices against occupational injuries, and explored some of the factors affecting the utilization of PEP (see Annexure F).

3.4.6.2 Data collection process

Data collection began in the period between August and September 2017. After permission was obtained from the relevant authorities, the researcher secured appointments with the managers of the two institutions to negotiate the consent to participate. The researcher went to each ward/unit in the hospital explaining the research purpose, objectives, and the process as a whole to all prospective respondents.

During the data collection week, the researcher personally delivered the questionnaires to each ward in the hospital and public health unit, taking care not to interfere with the nurses' work schedule by making use of working breaks. Those who could complete the questionnaire were allowed to do so, and those who opted to complete it later were requested to do so and instructed to deposit the completed questionnaires in provided sealed boxes left in each nurse's station. Respondents had one week to return the questionnaire. To enhance the response rate, the researcher made follow-up telephone calls to each unit three days after distributing the questionnaires. After a week, the researcher went to collect the sealed boxes which were then emptied, and the respondents were thanked for their participation. The questionnaires were put in a large envelop and locked in a cabinet in the researcher's room where no one has access except the researcher.

3.5 RELIABILITY AND VALIDITY

3.5.1 Reliability

The reliability of a quantitative instrument refers to the consistency or accuracy of the research instrument in yielding consistent numerical results each time it is applied (Burns & Grove 2011:332). Furthermore, reliability implies that a degree of repeatability could be achieved in the event of the same study being conducted elsewhere under the same conditions that prevailed at the original research site. It is also concerned with the researcher's ability to accurately collect and record information (Brink et al 2012:127; De Vos, Strydom, Fouche & Delport 2011:177). In this study, the questionnaire was

subjected to a test-retest by administering it to a small sample of 10 conveniently selected respondents who were not part of the main study. A statistician was also consulted and reviewed the tool to establish and examine whether the Cronbach Alpha correlation calculation fell within the acceptable limit between 0.7-0.9.

3.5.2 Validity

The validity of the instrument is the determination of how well the instrument reflects the abstract concept being examined (Burns & Grove 2011:334). It also seeks to ascertain whether an instrument accurately measures what it is supposed to measure (Brink et al 2012:165). It is divided into different types, including internal and external validity (De Vos et al 2011:153). Internal validity refers to the degree to which changes in the dependent variable are indeed due to the independent variable, rather than to something else (De Vos et al 2011:153).

External validity is the degree or extent to which results can be generalized to the whole population. This means that the findings should be not only true in similar experiments, but also in real life (De Vos et al 2011:153).

Furthermore, measures to enhance external validity include using a large sample, which is representative of the total population, and also literature validations which enable the researcher to compare the findings of the current study with those from other previous similar studies. Validity, like reliability, is not an all-or-nothing phenomenon; it is measured on a continuum. No instrument is entirely valid (Burns & Grove 2011:334). Validity varies from one sample to another and from one situation to another, therefore, validity testing evaluates the use of an instrument for a specific group or purpose, rather than the instrument itself. For this study, content validity was ensured by conducting an extensive literature review on the topic before designing the tool, and by consulting with the supervisor. The pilot testing of the questionnaire was also used to highlight those question items that needed to be amended due to ambiguity as evidenced by a difficulty to answer or respond.

3.6 DATA MANAGEMENT AND ANALYSIS

Data analysis refers to the technique used to reduce, organize, and give meaning to data in order to answer the research question. In other words, it is a process to help make good sense of data (Burns & Grove 2011:535). In this study, the researcher scrutinised each returned questionnaire to ascertain whether all questions were answered as expected. Each questionnaire was given a unique number identifying it to facilitate error tracking where necessary. From this point on the respondent was referred to by his or her study number. Data were then coded and entered into the computer. The Statistical Package for the Social Sciences (SPSS Version 21) was used for data capturing, editing, and analysis. Summary descriptive statistics were conducted to describe and summarise data. Graphs, frequency tables, percentage distribution and pie diagrams were used to analyse and present the demographics, as well as the different questions in the questionnaire. In some instances, cross tabulations were conducted related to the research questions. It is on the basis of the majority percentage responses that conclusions and findings were arrived at on each individual questionnaire variable. Respondents' self-report was used to explore and identify factors contributing to poor utilization of HIV-related PEP using an exploratory design, and to find out why nurses are reluctant to use HIV-related PEP. A statistician assisted with the data analysis, and the output was monitored by the researcher.

3.7 ETHICAL CONSIDERATIONS

In this study, the researcher adhered to the following principles of ethical conduct: obtaining permission to conduct the study; informed consent; beneficence; protection from discomfort and harm; the right to privacy, confidentiality and anonymity; and voluntary participation.

3.7.1 Obtaining permission to conduct the study

After being granted ethical approval by the Higher Degrees Ethics Committee of the Department of Health Studies, UNISA, the researcher then applied for permission to conduct the study – with the approved research proposal attached – to the Swaziland Ministry of Health and the hospital and public health unit managers in the selected region in Swaziland (see Annexure C). After all permissions were granted, the researcher visited the hospital and clinic to negotiate the respondents' consent to participate, and thereafter proceeded with data collection.

3.7.2 Informed consent

Informed consent refers to the agreement of a prospective subject or participant to participate voluntarily in a study after he or she has assimilated the essential information about the study (Burns & Grove 2011:540). Respect for persons requires that subjects be given the opportunity to choose what shall or shall not happen to them. Obtaining informed consent implies that all possible or adequate information on the goal of the investigation, the possible advantages and disadvantages, and dangers to which participants may be exposed, as well as the credibility of the researcher, be rendered to the potential participants (De Vos et al 2011:117).

Participants must be legally and psychologically competent to give consent. Written informed consent was obtained from the nurses after full disclosure of the study process was provided by the researcher (see Annexure E). The consent form contained information about the purpose and the scope of the study, the respondents' benefits for participating in the study, and their right to withdraw if they so wished. Each respondent was requested to sign the attached consent form and return it with the completed questionnaire.

3.7.3 Beneficence

The principle of beneficence encourages the researcher to always do good and, above all, do no harm (Burns & Grove 2011:118). The researcher reassured the respondents

that their involvement in the study or the information they provided was not to be used against them. Instead, the information would be used towards the betterment and improvement of healthcare outcomes. The benefits for participating in this study were explained to respondents in terms of the significance for conducting the study, the aim and objectives, as well as the recommendations that would emanate from the findings of the study. Participation in the study would solely be to provide the required data regarding factors that contribute to the nurses' poor utilization of HIV-related PEP so as to be able to recommend improved safety measures for health care workers. Thus, it would ultimately promote the quality of their work life.

3.7.4 Protection from discomfort and harm

The fundamental ethical rule of social research is that it must bring no harm to participants (De Vos et al 2011:115). This study had no potential for physical, emotional, or social harm to the respondents. The researcher also made sure to structure the questionnaire in a manner that was not harmful to the respondents. Respondents did not incur any financial costs by participating in this study, and no incentives were given to them for their participation. No individual names or identifier mechanisms were used in the report. The consent form included the researcher and the supervisor's contact details, and respondents were encouraged to contact either of them for any additional information regarding the study.

3.7.5 The right to privacy, confidentiality and anonymity

Privacy means keeping to oneself that which is usually not intended for others to observe or analyze. It is the freedom people have to determine the time, extent, and general circumstances under which their private information will be shared with or withheld from others (Burns & Grove 2011:114). In this study, only the researcher had access to such information and its appropriate documentation.

Anonymity exists when the subject's identity cannot be linked, even by the researcher, to his or her individual responses (Burns & Grove 2011:118). The research respondents were allocated codes instead of using their names in order to protect their identity, which served as a quality assurance measure insofar as their anonymity was concerned.

Confidentiality refers to the researcher's management of private information shared by participants (Burns & Grove 2011:118). Respondents were reassured that their information and the study results would be kept confidential, and no unauthorized persons other than the statistician and study supervisor, would have access to the study and its questionnaire responses.

3.7.6 Voluntary participation

Participation in the study was voluntary, and the researcher ensured that the respondents were fully informed about the study. They were allowed to exercise their right to withdraw at any point during the study in the event that they felt their human rights or dignity were violated by either the researcher or the research process. Nobody should ever be coerced into participating in a research project, because participation must always be voluntary. Respondents were assured that should they refuse to participate, there would be no negative consequences for them.

3.8 CONCLUSION

This chapter highlighted the research methodology used in this study. Outlined in the methodology were the research design and setting; the sampling procedure followed, including the inclusion and exclusion criteria; the sample size; and the data collection method and process. Also, ethical considerations complied with in this study were discussed. Data analysis procedures and methods were described and considered. The next chapter presents and analyses the findings of the current study.

CHAPTER 4
DATA ANALYSIS AND PRESENTATION OF RESEARCH FINDINGS

4.1 INTRODUCTION

This chapter presents the data analysis and study findings on the factors contributing to nurses' poor utilization of HIV-related PEP at a selected region in Swaziland.

4.2 DATA ANALYSIS

Two hundred (200) questionnaires were distributed among nurses at a government hospital and a public health unit, and a total of 200 questionnaires were completed. Only n=1 (0.5%) was incomplete, giving a response rate of 100%. After thoroughly checking the questionnaires for completeness, the researcher entered the data into an Excel template for the statistician to input on the SPSS version 21 software. Descriptive statistical analysis, inferential statistics, and cross tabulation were conducted to describe and summarize the data. Chi-Square tests were run to determine whether two variables were independent or related to each other, and in this instance, demographic data such as age, gender, and duration of service were used to determine whether they have an effect on the HIV-related PEP utilization by practicing nurses (Burns & Grove 2011:401). The correlation of some of the questions was done using Pearson's correlation test to see if PEP utilization could be explained in relation to other variables. The data are presented as composite frequencies in tables, as well as figures, pie and bar graph charts, with supporting descriptions. Guided by the study objectives, the presentation of the results is structured into four sections. The first section details a clear description of the characteristic profile of the respondents; the second section presents the results of the nurses' knowledge about PEP; thirdly the nurses' perceptions and beliefs towards the prophylaxis are described; and lastly, the presentation of the preventive practices related to occupational exposure to HIV is presented.

4.2.1 Demographic profile of the study participants

A total of 200 respondents from the two institutions completed the questionnaire. The characteristic profile of the respondents is described in terms of age, gender, educational background, and years of service. Table 4.1 shows details of these characteristics. The reason for including the biographical data was to determine whether there were any significant relationships between the demographic characteristics of the respondents and their responses to the questions on factors affecting nurses' PEP utilization.

Table 4.1: Demographic characteristics of the respondents

VARIABLE	FREQUENCY	PERCENT
Age Group		
20 – 29 years	43	21.5
30 - 39 years	85	42.5
40 – 49 years	52	26.0
50 – 59 years	19	9.5
60 years and above	1	0.5
Gender		
Male	36	18.0
Female	164	82.0
Qualifications		
Certificate (Nursing Assistant)	31	15.5
Diploma in Gen. Nursing (Single Qualified)	20	10
Diploma in General Nursing and Midwifery	76	38.0
Undergraduate (Bachelor of Nursing Science)	71	35.5
Graduate (Master of Nursing Science)	2	1.0
Service Duration		

VARIABLE	FREQUENCY	PERCENT
1 – 5 years	49	24.5
6 – 10 years	56	28.0
11 – 12 years	24	12.0
12 years and above	71	35.5
Total	**200**	**100.0**

4.2.1.1 Age and gender

The study respondents' ages ranged between 20 – 60 years. A high percentage, n=85 (42.5%), of respondents were between the ages of 30 – 39 years, and few were 50 years and above: n=20 (10%). Figure 4.1 shows these age distributions. This is indicative of a high number of younger generation nurses as study respondents. A majority of the respondents were females, n=164 (82%), showing this genders' domination of the nursing industry.

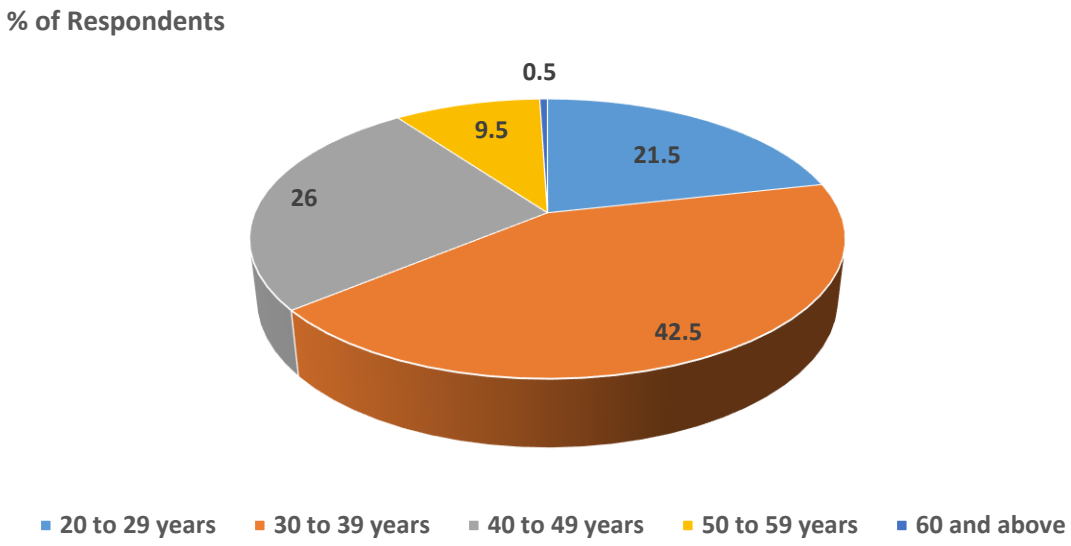

Figure 4.1: Age distribution of respondents

4.2.1.2 Professional qualifications

The majority of the respondents, n=96 (48%), held a diploma in either general nursing or midwifery, while n=74 (36.5%) held either a bachelor's degree or master's degree. Figure 4.2 shows the qualifications of the nurses. In this study, the majority of the respondents were diploma holders.

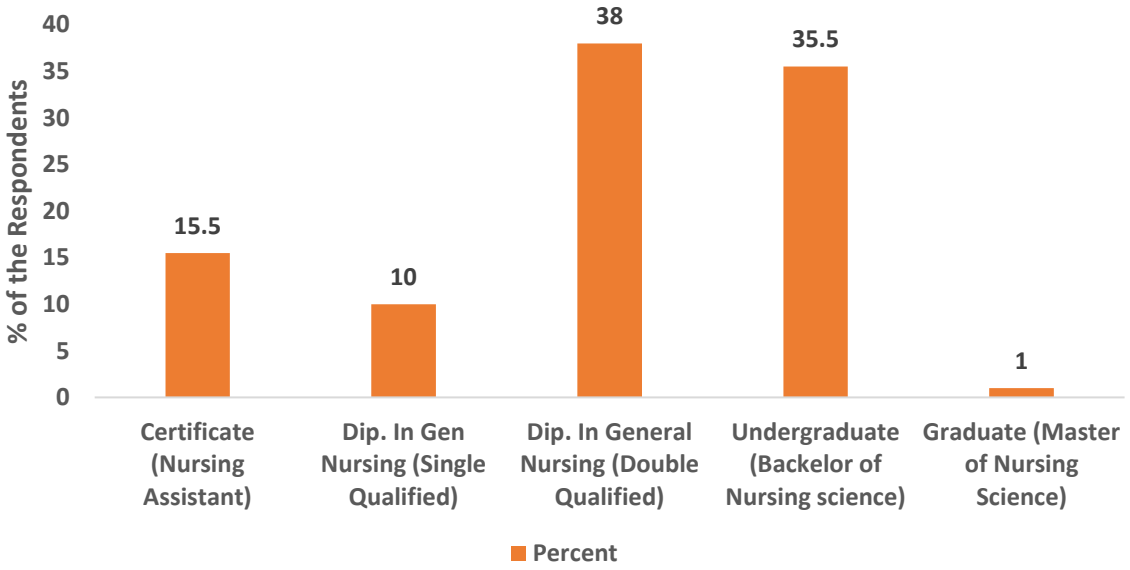

Figure 4.2: Distribution of participants' qualifications

4.2.1.3 Service duration

The majority (75.5%) of respondents in the study had been in nursing service for 6 – 12 years, with only 24.5% (n=49) with less than 6 years' service experience. Figure 4.3 shows the distribution of respondents' duration of service. This implies that though most of the respondents have been in the nursing service for a long time, there is still a need for training about the PEP since most were seen not to be knowledgeable about the prophylaxis as reflected by the results in this study.

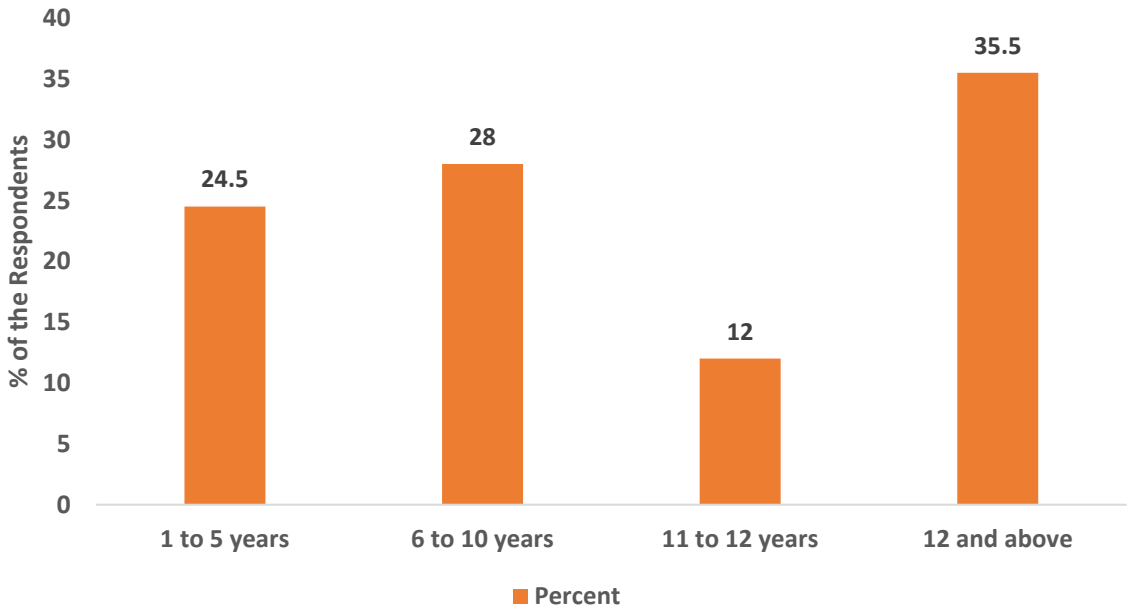

Figure 4.3: Distribution of participants' years of service

4.3 THE RESULTS OF THE STUDY

To provide answers to the research questions, the collected data were used to determine whether the following were factors contributing to the nurses' poor utilization of HIV-related PEP.

Knowledge level and attitude towards utilization of PEP in relation to:

- How information regarding PEP has been acquired, for example, training attended. Several of the respondents (55.5% n=111) have not attended any PEP training.

- Processes in the utilization of PEP (knowledge of the initiation time, duration of treatment, beliefs on its importance and effectiveness); respondents' awareness of the existence of PEP guidelines and policies; PEP protocols and procedures to be followed.

- Preventive practice information regarding the use of personal protective equipment, proper handling and disposal of sharps, and hand washing were some of the questions asked.

4.3.1 Knowledge acquisition about PEP

Question items 1 to 3 in Part B of the questionnaire explored the aspects related to knowledge. Respondents were asked if they had ever heard about PEP and what the sources of the PEP information were.

- **Ever heard of PEP**

Most of the respondents, 97.5% (n=195), had heard about PEP while very few (2.5%) stated that they had never heard of the PEP as illustrated in Figure 4.4. For those who had heard about PEP, they indicated their source of information as training even though it was not ascertained whether they were referring to in-service training or workshops and other training. Some mentioned colleagues, friends and reading from journals and other sources. These results imply that even though the nurses were seen not to be utilizing the PEP, most of them had heard about the prophylaxis.

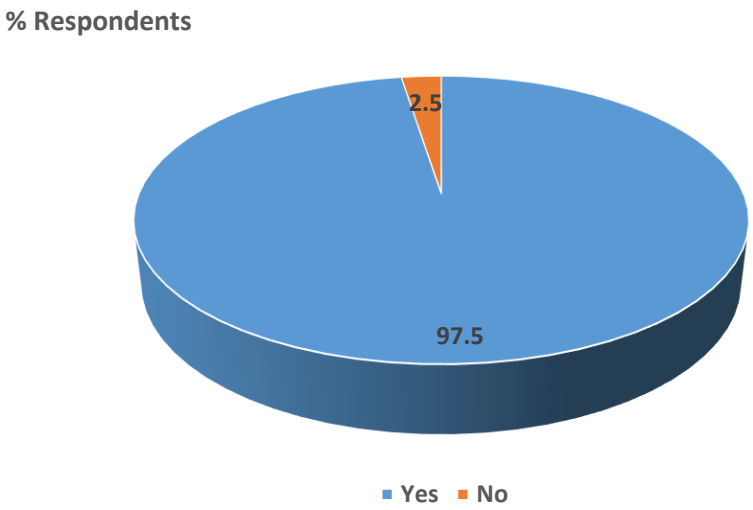

Figure 4.4: Ever heard of PEP

- **Training on PEP**

While most of the respondents had heard about PEP, several (55.5% n=111) had not attended any PEP training as shown in Figure 4.5. This is contradictory to the results mentioned earlier, where the respondents stated that their main source of information was through training.

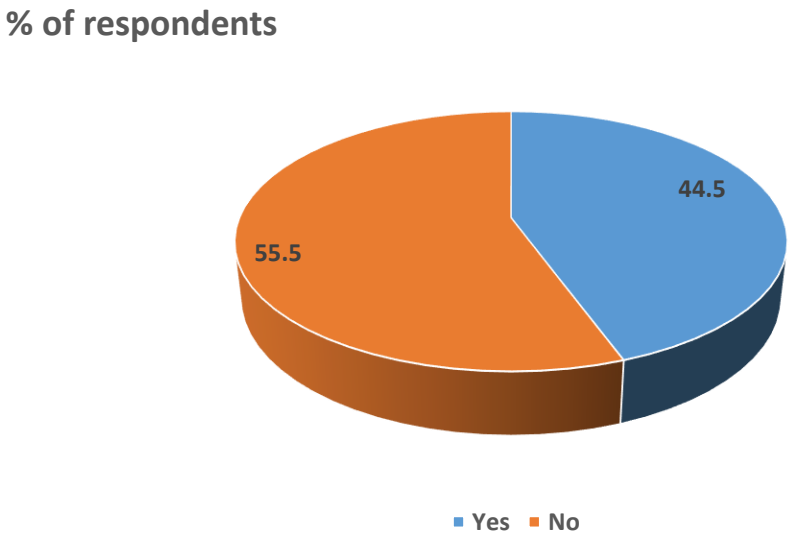

Figure 4.5: Training on PEP

4.3.2 Processes in the utilization of PEP

Respondents were asked questions (from 4 to 9) on the processes of PEP utilization. Knowledge of the indication, initiation time, and duration of treatment were some of the question items asked in the questionnaire.

- **PEP indication**

Almost half of the respondents, 52.5% (n=105), stated that for any needle stick injury during work, PEP should be indicated. There were respondents who cited PEP's indication for needle stick injury on patients with high HIV risk as 33% (n=66), needle stick injury on patients known to be HIV positive at 10% (n=20), and those with unknown HIV at 4.5% (n=9), as illustrated in Figure 4.6.

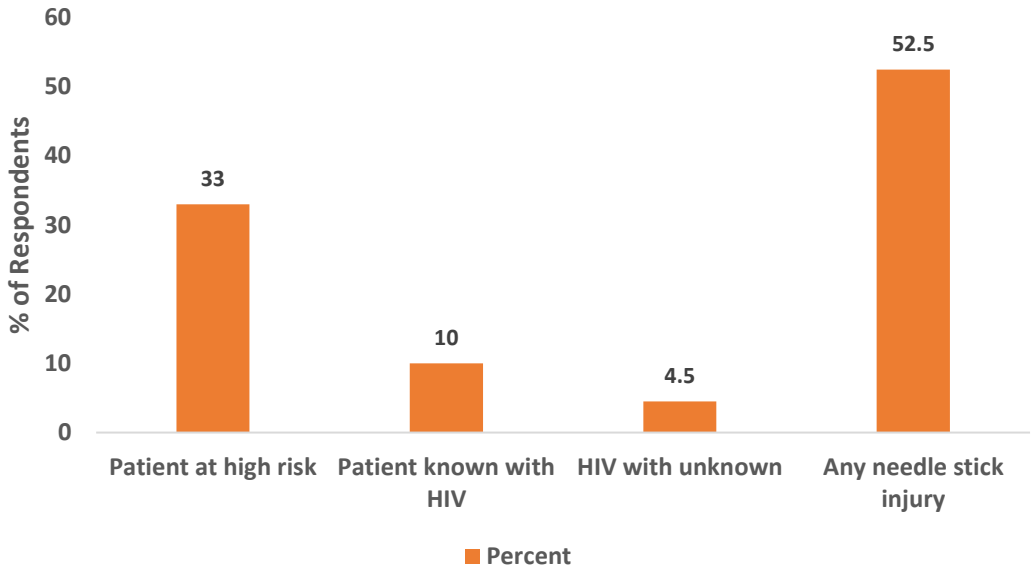

Figure 4.6: PEP Indication

- **PEP initiation time**

Under normal circumstances, the maximum time taken to delay PEP initiation is 72 hours. The results showed that most of the respondents, 82.5% (n=165), got the correct answer as illustrated in Figure 4.7. Others mentioned 24 hours, 6% (n=12), and within an hour as the maximum time. It is noteworthy that there were a few respondents who cited, 12 hours (2% n=4), and 3.5% indicated 48 hours.

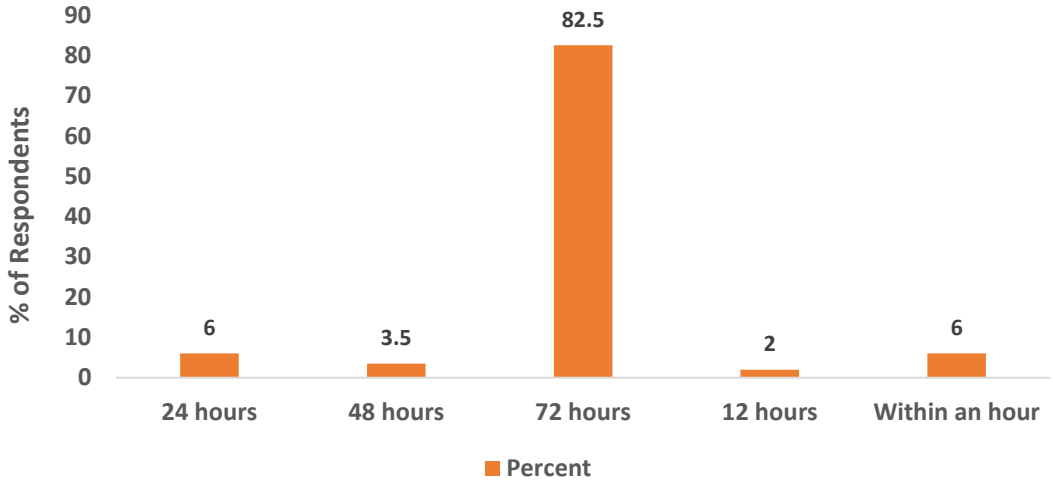

Figure 4.7: Maximum time to delay the PEP

- **Preferable time to take PEP**

The preferred time to take PEP is within an hour of exposure. A majority of the respondents, 88% (n=176), got the correct answer as shown in Figure 4.8. Other respondents cited 6 hours and 12 hours after exposure. Moreover, there are still a number of nurses who need to be educated on the HIV-related PEP initiation time.

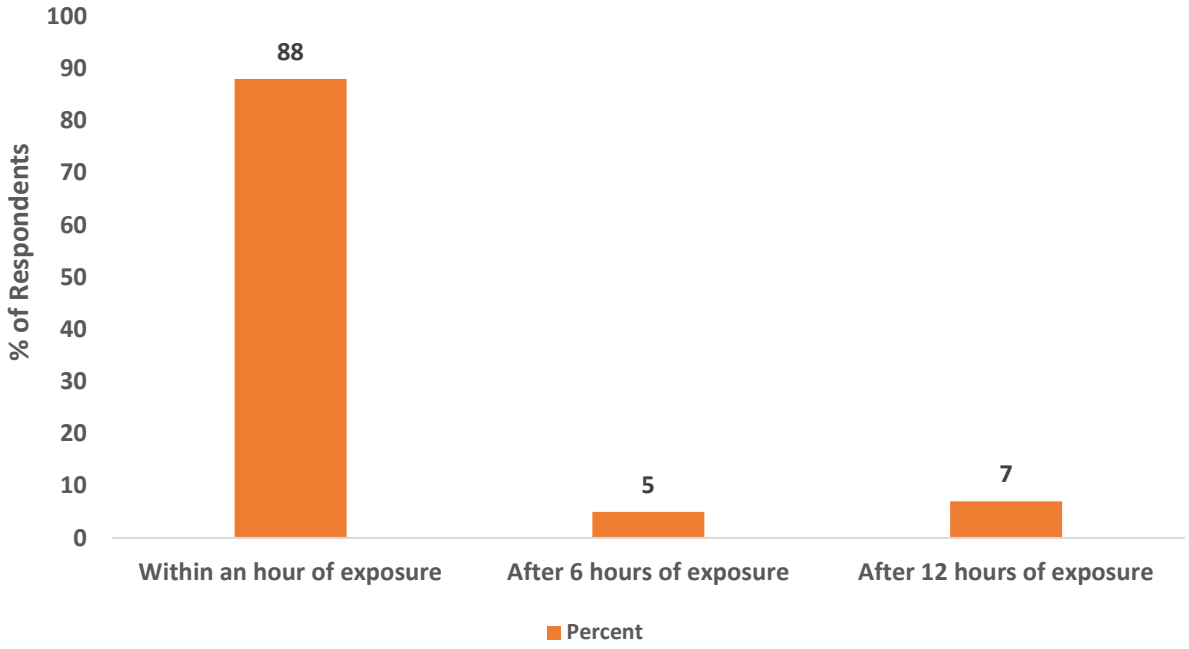

Figure 4.8: Preferable time to take PEP

- **Period to take PEP**

Under normal circumstances, the period to take PEP is 28 days. A majority of the respondents, 92% (n=184), stated that PEP was taken for 28 days, which was the correct answer for the duration of PEP. There were those individuals with different responses like “6 months”, 7.5% (n=15), and “lifetime”, as reflected in Figure 4.9.

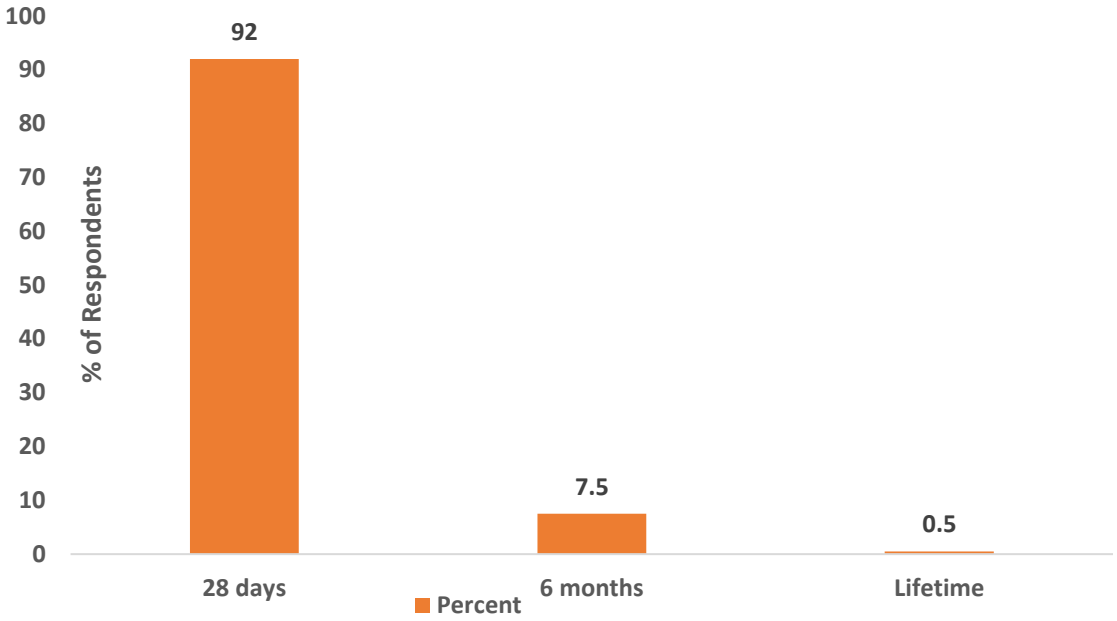

Figure 4.9: Period to take PEP

- **PEP utilization**

Respondents were asked questions on PEP utilization as shown in questions 6 to 8 of Part D of the questionnaire. Less than half of the respondents (38% n=75) mentioned having used the prophylaxis. The remaining 62.5% (n=125) of respondents stated not to have utilized the PEP. Some of the reasons why respondents never sought PEP were that 5.6% (n=7) claimed they did not have enough information about PEP, and the other 8% (n=10) respondents were afraid to go through the PEP process. The process of PEP includes, among other things, reporting the exposure to your supervisor, undergoing HIV testing and counselling, and if the health care worker is HIV negative, taking the prophylaxis. One individual did not want to take the compulsory HIV test which is a pre-requisite for the PEP, as reflected in Table 4.2.

Table 4.2: Never sought PEP, why

NEVER SOUGHT	FREQUENCY	PERCENT
Did not have enough information about PEP	7	5.6
Did not want to take the HIV test	1	0.8
Was afraid to go through the process	10	8.0

4.3.3 Preventive practices

Respondents were asked about the preventive practices that they used in questions 1 to 5 of Part D of the questionnaire. This included questions on proper handling and disposing of sharp instruments before and after use, and 95% (n=190) stated that this was in place in their facilities or units. Hand washing after contact with infectious patients was routinely practiced by the respondents as 97% (n=194) mentioned this aspect. About 95% (n=190) of the respondents claimed to be using personal protective equipment when anticipating contact with a patient's blood and body fluids. When it comes to development and distribution of written policies for occupational exposure management, about 51.5% (n=103) of the respondents stated that their organization does develop and distribute such policies. It is noted that approximately 31% (n=62) of the nurses reported that their organization did not have or distribute policies for the management of occupational exposure.

Respondents were asked to state whether they have ever been placed on HIV-related PEP after a needle stick injury, and 32% (n=64) responded to the affirmative. On the availability of PEP in the unit, 65% (n=130) confirmed the availability of PEP in their respective units, while 31% (n=62) indicated that PEP was not available in their respective units. Figure 4.10 shows the results pertaining to the preventive measures towards HIV.

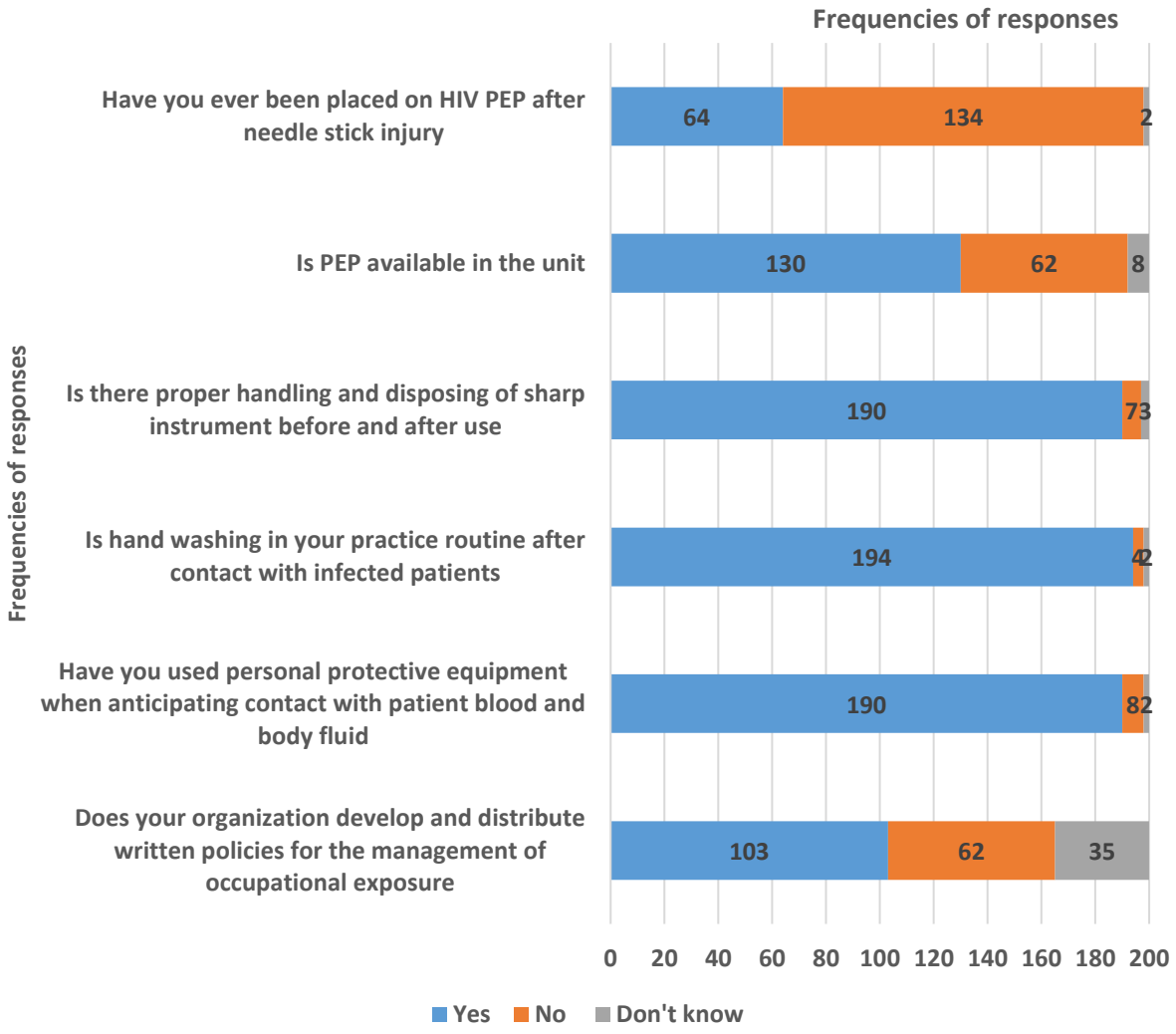

Figure 4.10: Preventive practices

- **PEP guidelines**

The respondents were further asked whether they know anything about PEP guidelines and 64.5% (n=129) mentioned that are informed about PEP guidelines. However, the 35.5% (n=71) who do not know anything about the PEP guidelines is of great concern, as shown in Figure 4.11.

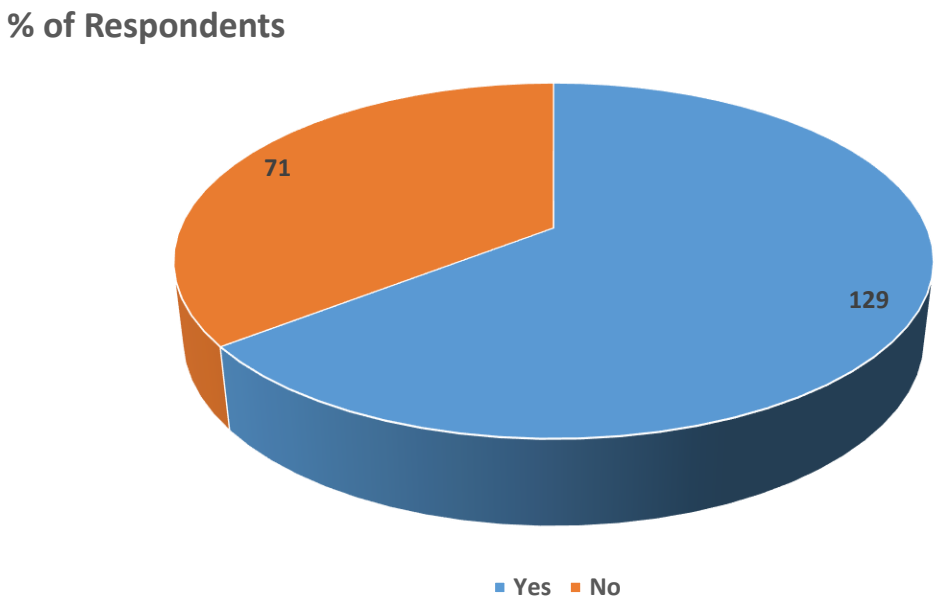

Figure 4.11: PEP guidelines

4.4 GENERAL PERCEPTIONS AND BELIEFS TOWARDS PEP

For the assessment of perceptions and beliefs in questions 1 - 7 of Part C, questions about the effectiveness and importance of PEP, whether PEP can reduce further HIV infection, and if training about PEP could cause a change in nurses' opinion about the prophylaxis, were asked.

- **Effectiveness of PEP**

Most of the respondents, 75.5% (n=151), listed PEP's effectiveness at 80-100%, which was the correct answer. There were 24.5% (n=49) respondents who were not sure of the effectiveness of PEP, as shown in Figure 4.12.

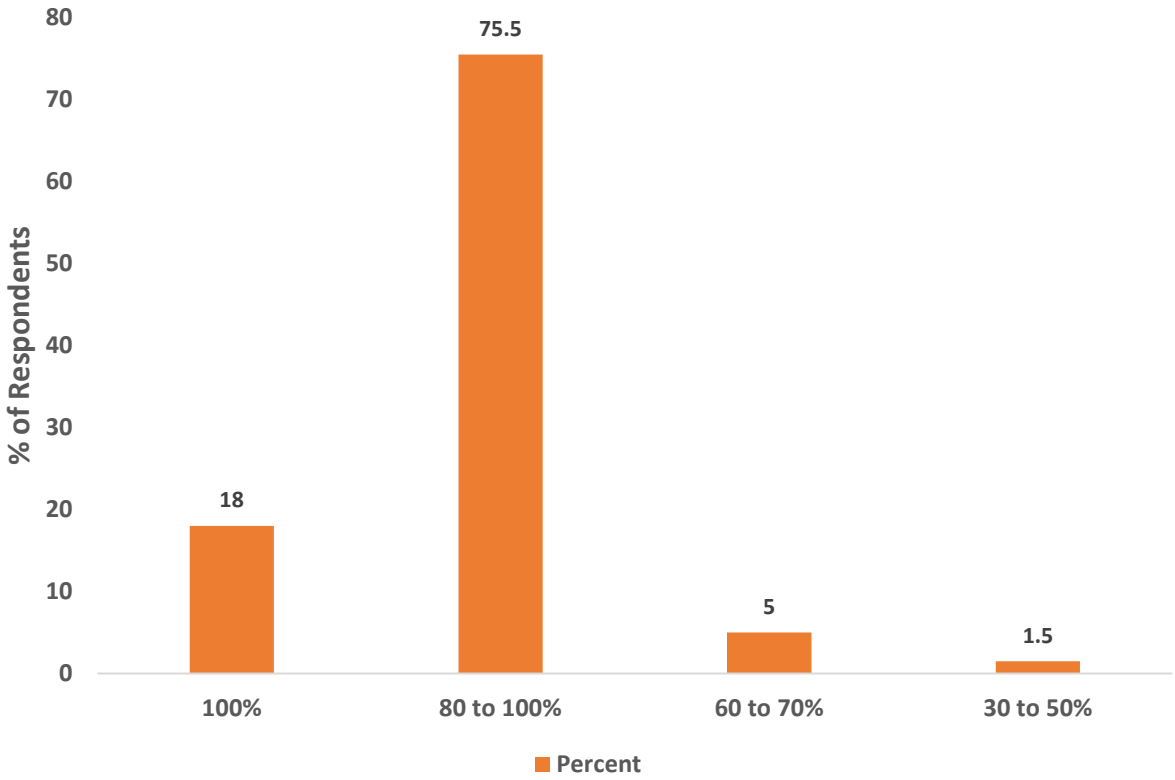

Figure 4.12: Effectiveness of PEP

4.4.1 Importance of PEP

Almost all the respondents (99.5% n=199) had strong feelings about the importance of PEP. One respondent did not finish the questionnaire, thus this information was declared missing for the respondent. On the belief that PEP reduces the likelihood of becoming HIV-positive, 94% (n=188) of the respondents agreed. This is shown in Figure 4.13.

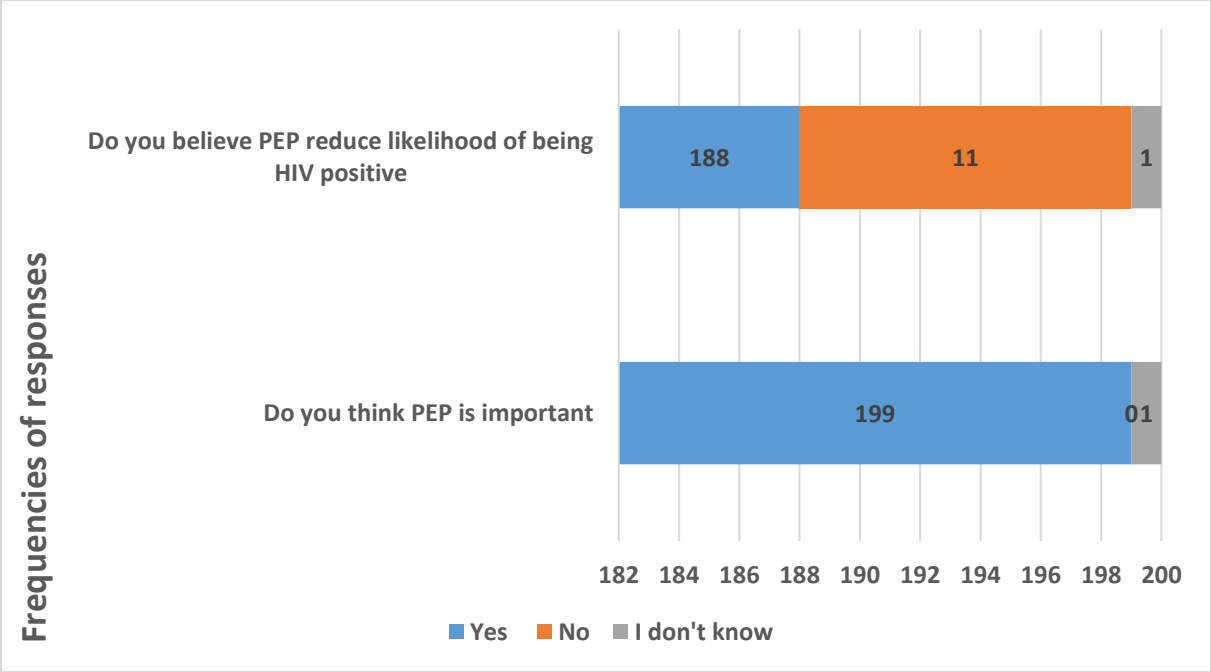

Figure 4.13: Importance of PEP

4.4.2 Attitudes towards PEP

Most of the respondents perceived that PEP training is vital for behavioral change; 84% (n=168) of the respondents agreed that training on PEP was crucial for behavior change. On their opinion whether PEP is unimportant if exposure is not with a known HIV-positive patient, only 27.5% (n=55) of the respondents agreed, and over 60% (n=130) did not agree. On issues around PEP guidelines in work areas, 98% (n=196) strongly agreed that PEP guidelines should be in work areas. Around 59.5% (n=119) of the respondents agreed that PEP does prevent further infection, while 31.5% (n=63) disagreed with such a notion. PEP is indicated for any type of sharps injuries and this was agreed by roughly 66.5% (n=133) of the respondents, while 21% (n=42) did not agree with this claim. This is illustrated in Figure 4.14.

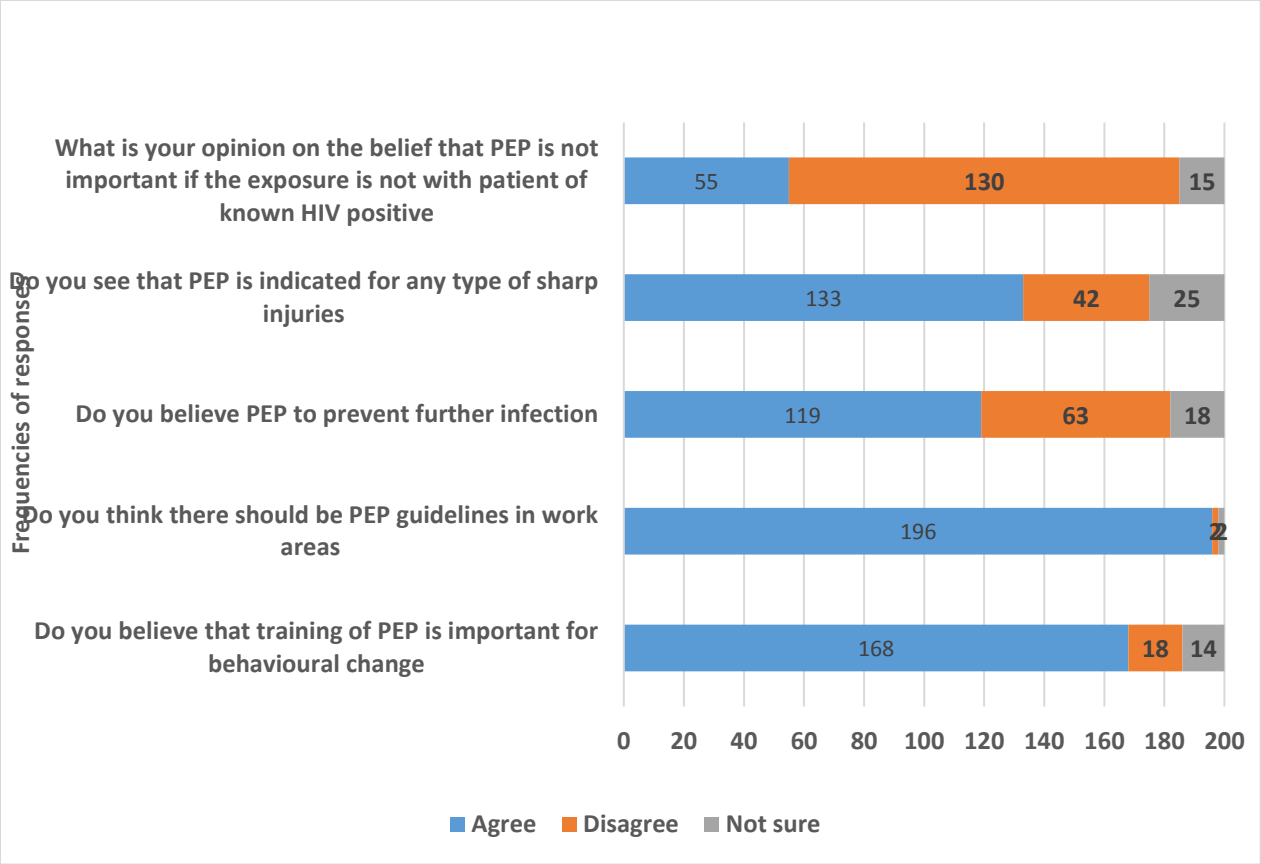

Figure 4.14: Attitudes towards PEP

4.5 SOCIO-DEMOGRAPHIC DETERMINANTS IN THE PEP UTILIZATION AMONG NURSES

In order to determine whether knowledge about PEP and its utilization was affected by the respondents' socio-demographic characteristics such as age, gender, and years of nursing experience, a Pearson chi-square was employed. The Pearson chi-square test refers to a parametric test used to determine relationships among variables. It is used to determine if two variables are independent or related to each other (Burns & Grove 2011:394).

4.5.1 PEP utilization against age

In terms of PEP utilization, the prophylaxis was found to be used by 34.1% (n=29) respondents in the age group of 30 – 39 years, followed by those in the age group of 40 – 49 years (40% n=21). This is displayed in Table 4.3. Based on the results, the p-value is 0.782, but it is not statistically significant since there is little difference among the different age groups for the number of participants who reported to have used the HIV-related PEP. Therefore, there is no association between age and the utilization of PEP.

Table 4.3: Analysis of PEP utilization against age

In which age group do you belong	PEP utilization		Total
	Never used	Ever used	
20-30 years	30 (69.8%)	13 (30.2%)	43
30-39 years	56 (65.9%)	29 (34.1%)	85
40-49 years	31 (60%)	21 (40%)	52
50-59 years	13 (68%)	6 (32%)	19
60 years+	1 (100%)	0	1
Total	**131 (65.5%)**	**69 (34.5%)**	**200**
Pearson chi^2 (4) = 1.7474		P-value =0.782	

4.5.2 PEP utilization against gender

The following findings show that PEP was being utilized by 35.4% (n=58) of the female nurses, as compared to the 31% (n=11) male nurses. However, a contributing factor could be that the study was dominated by female respondents, as reflected in Table 4.4. Therefore, there is no association between gender and the utilization of PEP.

Table 4.4: PEP utilization against gender

What is your gender	PEP utilization		Total
	Never used	Ever used	
Male	25 (69%)	11 (31%)	36
Female	106 (64.6%)	58 (35.4%)	164
Total	**131 (65.5%)**	**69 (34.5%)**	**200**
Pearson chi^2 (1) = 0.3023		P-value =0.582	

4.5.3 PEP utilization against years of nursing experience

The findings revealed that respondents with more nursing experience were significantly less inclined to utilize PEP than those with less experience. Fewer were utilizing PEP in all the different years of experience, as shown in Table 4.5.

Table 4.5: PEP utilization against years of nursing experience

Have you ever sought PEP	How long have you been practicing as a nurse				
	1-5 years	6-10 years	11-12 years	12 years+	Total
Yes, every time I needed it	13	11	8	16	48
Yes, some of the time I needed it	1	6	4	10	21
No, I have never sought it	35	39	12	43	129
Total	49	56	24	69	198

4.5.4 Knowledge about the PEP guidelines and utilization of PEP

Sixty-eight percent (68% n=46) of the respondents who were not aware of the PEP guidelines never used the HIV-related PEP. A majority of 64% (n=82), who knew the PEP guidelines, had never utilized the prophylaxis, probably because they never needed it. There is no association between knowing the PEP guidelines and the utilization of PEP as shown in Table 4.6.

Table 4.6: Knowledge about the PEP guidelines and utilization of PEP

Do you know about PEP guidelines	PEP utilization		Total
	Never used	Ever used	
Yes	82 (64%)	47 (36%)	129
No	46 (68%)	22 (32%)	68
Total	**128 (65%)**	**69 (35%)**	**197**
Pearson chi^2 (1) = 0.3259		P-value =0.568	

4.6 CONCLUSION

This study assessed factors that contribute to nurses' poor utilization of HIV-related PEP at a selected region in Swaziland. The results of this study indicated that occupational exposure to patients' body fluids is common among nurses and post-exposure management is sub-optimal. Not all nurses exposed to HIV are aware of PEP and there is low uptake of PEP. Positive attitudes and behavior were seen to prevail in more than half of the respondents. In the next chapter, findings are summarized, the limitations of the study are highlighted, and recommendations are described, followed by the conclusion.

CHAPTER 5
DISCUSSION OF STUDY FINDINGS, CONCLUSION, RECOMMENDATIONS AND LIMITATIONS OF THE STUDY

5.1 INTRODUCTION

This chapter provides a discussion of the study findings, conclusions and recommendations drawn from the findings. The contributions of this study, together with its limitations, are also described.

The purpose of the study was to investigate factors contributing to nurses' poor utilization of HIV-related PEP. A quantitative research design using an exploratory, descriptive cross-sectional survey was used in the study. Data collection took place through a self-administered questionnaire which was completed by nurses working in a government hospital and a public health unit in Swaziland.

The findings sought to answer the following research questions:

- What do nurses know about HIV-related PEP?
- What are the attitudes of nurses towards HIV-related PEP?
- What are the factors contributing to nurses' poor utilization of HIV-related PEP?

The demographic characteristics of the respondents assisted in relating the study findings into the context as they sometimes have a bearing on one's behavior.

5.2 THE MAJOR FINDINGS OF THE STUDY

From the detailed presentation of the results in the previous chapter, conclusions about the following factors that contribute to the nurses' poor utilization of HIV-related PEP were drawn. These included:

- Knowledge level about PEP
- Attitude towards PEP
- Adherence to preventive practices
- Other factors such as fears about the processes of the PEP

5.2.1 Knowledge about PEP

The results of this study showed that most of the respondents were knowledgeable about PEP. The majority of respondents stated that their main source of information on PEP was training. Since there is a high prevalence of occupational exposure to patients' body fluids among health care workers, the findings of this study showed a high level of awareness on HIV-related PEP, and there is concern about such exposures and the impact of the resulting injuries. High levels of PEP knowledge were observed, even within the different age groups of the participants.

The results of this study are slightly higher (98% n=195) than those highlighted in a study by Dhital, Shama and Dhital (2017:50), where the respondents were assessed on awareness and knowledge about PEP; their findings stated that most (> 50%) of the respondents had previous knowledge about PEP for HIV. These findings showed that the knowledge levels of the nurses were average and they thus require training on the hospital's protocol regarding HIV risk factors and PEP for HIV. It is also important to note that the Swaziland Ministry of Health Workplace Policy (2008) is in agreement that PEP information and services are regarded as issues of the clinical area. Aminde et al (2015:3) concur with the current study in reporting that a majority of the respondents in their study (89% n=137) had heard about PEP for HIV and their source of information

was ward rounds. Only a few (6.5% n=10) of the respondents received training on PEP. Most of their respondents (90.3% n=139) correctly identified needle stick injuries as an indication for PEP.

Matthews et al (2013:4) reported different findings, in that a proportion of the respondents in their study (36.9% n=72) were found to have inadequate knowledge about PEP for HIV. The findings of high PEP knowledge levels in this current study indicate that the respondents at some point received information about PEP. Although a few attended training, as shown in the earlier responses, some of the respondents could have gotten their information about prophylaxis through other means like ward rounds and reading from the internet or journals. Therefore, it is of paramount importance for nurses to have adequate knowledge on how they can protect themselves against HIV.

The preferred time to take the prophylaxis is within an hour of exposure. A number of the respondents got this question right. Respondents were called upon to state the effectiveness of PEP and most mentioned PEP effectiveness as 80-100%. There were respondents with less knowledge about the effectiveness of the prophylaxis. Most of the respondents cited 72 hours as the maximum time to delay PEP, while others mentioned 24 hours, and within an hour as the maximum time. It is noteworthy that there were respondents who cited 12 hours and others claimed 48 hours. A majority of the respondents stated that the PEP duration was 28 days, and there were those individuals with different responses like 6 months and lifetime.

PEP, which involves the administration of ARV drugs, has been estimated to reduce HIV infection by 81%, and it is most effective within 1-2 hours of exposure and not more than 72 hours after exposure. This study indicated that a lot of respondents were well aware of the guidelines for PEP since a majority answered the questions correctly on the preferred time to take PEP, the effectiveness to take PEP, and the maximum time to delay PEP.

The current study is concurrent with research by Lungu (2011:73), which also states that most of the health care workers were aware of the PEP guidelines. Lungu (2011:73) continues to say that PEP is a critical requirement in the health care setting where workers are often exposed to body fluids. Since nurses are highly exposed to HIV, there is a need for education and awareness about PEP as an essential factor for successful prevention of HIV within the workplace. Singh et al (2015:3) differ with the current study as they reported that a significant portion of their respondents had never heard of PEP. Only 53.4% had heard of PEP and their source of information was friends. Therefore, the respondents in their study had inadequate knowledge of the PEP.

5.2.2 Attitudes towards post exposure prophylaxis

The knowledge an individual has of certain practices could significantly affect an individual's attitude towards those practices. As discussed in Chapter 4 of this study, respondents generally showed a positive attitude towards PEP for HIV. There is an association between training on PEP and behavior change, as several respondents who had received training on PEP agreed that such training has a bearing on behavior change; represented by a p-value of 0.000. These findings are similar to those of a study by Matthews et al (2013:9), who reported that a majority of their respondents (75.4% n=147) had a good attitude towards PEP, even though a significant number (33.8% n=66) had been exposed to blood and body fluids while giving care. Katsinde and Katsande (2012:30) also reported similar results of respondents in their study having had positive beliefs about PEP, but their attitudes towards actually practicing it was negative.

Almost all the participants (98% n=196) as reflected in Chapter 4 agreed that PEP guidelines should be availed in the work areas which will serve as a reminder to the staff. All those who had received PEP training agreed to this notion, apart from 2%. Again, this will only be true if all the service providers in the facilities read the guidelines made available to them to understand PEP.

Even though there were several participants who agreed that PEP was indicated for any type of sharp needle injuries, there were those who disagreed; even among those that have received training on PEP. There is an association though between training on PEP and understanding that PEP should be indicated for any type of sharp injury. Whether you attended training on PEP or not, most of the service providers disagreed with the belief that PEP is not important if the exposure is not with a patient of known HIV-positive status. The findings could mean that many health care workers may have knowledge about HIV, but stigma may be a hindrance towards applying that knowledge to their own personal risk assessment. Furthermore, this could mean that fear stems from a lack of knowledge, moral attitudes, and perceptions about people living with HIV and AIDS.

However, in their study on the assessment of knowledge, attitude and practice towards PEP for HIV among health care professionals, Singh et al (2015:3) revealed that there were a few respondents (35%) who agreed that PEP is effective in HIV prevention, and the remaining 65% believed that PEP is not effective in HIV prevention. Thus, a negative attitude was observed with their respondents. A small number were of the opinion that PEP is needed, while most did not consider PEP as important. Only 35% of the respondents agreed that PEP guidelines must available be in the working areas.

5.2.3 Adherence to preventive practices and PEP utilization

This section discusses preventive practices in a bid to prevent HIV infection. The results show that policies for the management of occupational exposure have been developed and distributed by health facilities as confirmed by more than half of this study's respondents. While these policies are in place, this has not translated to knowledge nor use. Countries have signed international declarations on occupational safety, but it is still not practiced by all health facilities.

Almost all the respondents claimed to have used the personal protective equipment when anticipating contact with patients' blood and body fluid. This also shows that health facilities are fully equipped to handle such situations as health care workers opt to use

personal protective equipment in a bid to avert infection. Findings in this study showed that respondents' compliance with universal precautionary measures was high.

The results show that almost all the respondents alluded to the fact that hand washing is a routine practice after contact with infected patients. In nearly all the health facilities there is proper handling and disposal of sharp instruments before and after use as indicated by almost all respondents. The availability of PEP in some health facilities is still found to be inadequate as some of the respondents mentioned that this was not available in their unit. Again, it can be concluded that occupational and safety precautions are not taken care of in all health facilities as per the international declaration, which the country signed. However, this study's findings depict a better picture as compared to a study by Singh et al (2015:3), in which respondents revealed a lack of developed policies for PEP in their departments and reliance on only using personal protective equipment and hand washing after coming in contact with patients. It is noteworthy that if a number of respondents do not believe that PEP can prevent HIV infection, then its usage can be limited. This shows that there is a strong need to emphasize prophylaxis in the educational strategies of HIV prevention as it might be of help in increasing HIV and AIDS awareness and lead to the utilization of PEP.

Less than half of the respondents confirmed having been placed on HIV-related PEP after needle stick injuries. A minority (38% n=75) alluded to having sought PEP. For the respondents who had sought PEP, 24% mentioned that they requested it every time they needed it. This study revealed that only a few respondents were utilizing the prophylaxis. The age group of 30 – 39 years (34.1% n=29) was seen to be the one utilizing the prophylaxis. This could be because the respondents were still new in the profession. People tend to use experience and reduce their chances of exposure the longer they are in the field. The finding of a low rate of administering PEP for HIV in this study is an indication that nurses exposed to patients' body fluids were not optimally utilizing PEP for prevention purposes. This could mean that although the respondents had heard about PEP and knew that it concerned them, they did not take a keen interest in it or had any desire to use this preventive measure against HIV infection during their clinical

experience. Aminde et al (2015:3) reported similar results; in their study there was a low uptake of the prophylaxis among the respondents, as seen in the current study. Out of n=81 respondents who reported occupational exposure, only 4.9% (n=4) managed to take the prophylaxis.

This concurs with the study done by Lungu (2011:76), which states that about 60% (n=41) of respondents did not report accidental exposure, which means that PEP was not being utilized. Their reasons were: not knowing how to report, not wanting to take the HIV test, or they thought they were not at risk of contracting HIV infection. Desta-Atlaw (2013:49) reported similar results which showed that only a few (16.0%) of the 131 health care workers exposed to patients' body fluids took PEP.

5.2.4 Fears about the processes of PEP

Study findings revealed lower levels of PEP service utilization among respondents and factors identified as causes thereof included fears of the processes in the utilization of PEP – which entail testing for HIV – and stigma; adherence with the treatment; and dealing with the side effects of the medication. The findings are supported by Katsinde and Katsande (2012:6), who state that their respondents cited a lack of confidentiality and privacy, stigmatization, and the adverse side effects of the drugs used for PEP as reasons for not being keen to practice PEP even when exposed to HIV. The respondents, although aware of PEP's benefits, feared that if it is known that they have been exposed to HIV and had used PEP, workmates may stigmatize them. It is thus possible that stigma, fear, the absence of social support, and concerns about ARV side effects are potential barriers to PEP uptake.

Out of all the respondents in this study, only a few had sought PEP and it was available to some each time they needed it, and not available to some at times when it was needed. This then means that PEP is not readily available, yet it is a critical service in all health facilities dealing with HIV and AIDS interventions.

For respondents who had never sought PEP, they were further requested to state the reasons why. Most of the respondents said that they were afraid to go through the PEP process, which entails the HIV testing, among other things. It is worth further exploring what is involved in these processes, and what harm may result in people fearing to undergo the process. There were those who did not want to have an HIV test. This is a serious cause for concern in the health care fraternity. Information also seems to be lacking on PEP as there were respondents who did not have enough information on PEP, for them to take PEP.

These findings were also reported by Katsinde and Katsande (2012:32), who stated that many health care workers know about PEP but avoid implementing it even when they know they have been dangerously exposed. Reasons were fear of stigmatization, fear of side effects, and lack of confidentiality and privacy. From the results of this study, it could be assumed that even though the respondents were aware that they were at risk of HIV infection, they did not apply the risk awareness assessment to their personal lives to compel them to take action and report every exposure.

5.3 RECOMMENDATIONS

The following recommendations are made based on the findings of the current study.

5.3.1 Nursing practice

- Emphasis should be placed on strengthening and implementing appropriate preventive occupational health interventions aimed at reducing the occurrence of occupational exposures to patients' body fluids among health care workers.

- It is necessary that all nurses caring for patients should be informed about HIV-related PEP guidelines and policies. This entails information about the risk of exposure, the importance of early reporting following exposure, evaluation, counselling, treatment, and the follow-up of occupational exposures among health care workers.

- Organizational provision of all personal protective equipment must be a priority.

- There is a need to develop written protocols, policies, and guidelines at facility level for the prompt monitoring and evaluation of PEP services, so that occupationally attained HIV infections can be avoided among health care workers.

- Encouraging compliance with standard/universal precautions, and availing PEP drugs during duty hours, weekends and holidays, accompanied by appropriate counselling and testing of HIV, is essential for immediate use by health care workers.

- PEP training and refresher courses are recommended as they are part of the initial training of all health personnel on universal precautionary measures.

5.3.2 Future research

In this study, most of the respondents were found not to be using HIV-related PEP, therefore, further research could be conducted in order to investigate the nurses' perceptions and attitudes with regards to the HIV-related PEP.

Another study could also be done on the experiences of people who have experienced needled stick injuries.

5.4 LIMITATIONS

The study was limited to only two health facilities in a selected region of Swaziland. Thus, the research results may not be generalized to all nurses /health care workers, particularly those in other health settings within the country. The findings in this study may be prone to recall bias as they are based on respondents' reported experiences. The study followed a cross-sectional quantitative methodology and therefore was biased

since information was collected at the same time from the same respondents to reduce costs and time consumption.

Without the time and resource constraints, the researcher could have conducted the study in other clinics around the selected region, in order to increase understanding of the research problem and increase the generalizability of the study findings.

5.5 CONTRIBUTIONS OF THIS STUDY

Though the research findings were locally based in two particular health care centers, they can be used as a reference point for further research in other hospital settings, both in the city and in rural areas. The findings of this study can also be used by relevant stakeholders to make informed decisions related to health care workers' protection through health and safety at work.

5.6 CONCLUSION

This study assessed factors that contribute to nurses' poor utilization of HIV-related PEP at a selected region in Swaziland. The results of this study indicated that occupational exposure to patients' body fluids is common among nurses and post-exposure management is sub-optimal. Not all nurses exposed to HIV are aware of PEP and there is low uptake of PEP. The result implies that hospitals need to incorporate a standardized written protocol and reporting system for the incidents of exposures. Hospitals also need to develop a better work atmosphere and proper management of exposed nurses and other health care workers. Health facilities should provide all the necessary preventive measures to reduce occupational exposures and facilitate supportive supervision to ensure infection prevention measures are followed.

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ANNEXURE A

ETHICAL CLEARANCE FROM THE UNIVERSITY OF SOUTH AFRICA

UNISA university of south africa

RESEARCH ETHICS COMMITTEE: DEPARTMENT OF HEALTH STUDIES

REC-012714-039 (NHERC)

1 March 2017

HSHDC/642/2017
MS PN Dlamini
Student: 5855-931-0

Supervisor: Dr FH Mfidi
Qualification: D Litt et Phil
Joint Supervisor: -

Dear MS PN Dlamini

Decision: Ethics Approval

Name: MS PN Dlamini

Proposal: Factors contributing to nurses' poor utilization of HIV related post exposure prophylaxis in a selected region in Swaziland.

Qualification: MPCHS94

Thank you for the application for research ethics approval from the Research Ethics Committee: Department of Health Studies, for the above mentioned research. Final approval is granted for the duration of the research period as indicated in your application.

The application was reviewed in compliance with the Unisa Policy on Research Ethics by the Research Ethics Committee: Department of Health Studies on 1 March 2017.

The proposed research may now commence with the proviso that:

1) *The researcher/s will ensure that the research project adheres to the values and principles expressed in the UNISA Policy on Research Ethics.*

2) *Any adverse circumstance arising in the undertaking of the research project that is relevant to the ethicality of the study, as well as changes in the methodology, should be communicated in writing to the Research Ethics Review Committee, Department of Health Studies. An amended application could be requested if there are substantial changes from the existing proposal, especially if those changes affect any of the study-related risks for the research participants.*

University of South Africa
Preller Street, Muckleneuk Ridge, City of Tshwane
PO Box 392 UNISA 0003 South Africa
Telephone: +27 12 429 3111 Facsimile: +27 12 429 4150
www.unisa.ac.za

3) *The researcher will ensure that the research project adheres to any applicable national legislation, professional codes of conduct, institutional guidelines and scientific standards relevant to the specific field of study.*

4) *[Stipulate any reporting requirements if applicable].*

Note:
The reference numbers [top middle and right corner of this communiqué] should be clearly indicated on all forms of communication [e.g. Webmail, E-mail messages, letters] with the intended research participants, as well as with the Research Ethics Committee: Department of Health Studies.

Kind regards,

pp

Prof L Roets
CHAIRPERSON
roetsl@unisa.ac.za

pp

Prof MM Moleki
ACADEMIC CHAIRPERSON
molekmm@unisa.ac.za

ANNEXURE B
REQUEST TO CONDUCT RESEARCH PROJECT

P.O. Box 1424
Mbabane

13 June 2017

Hospital Matron
Mbabane Government Hospital
P. O. Box 8
Mbabane

Dear Sir/Madam

Re-Request for permission to conduct a Research study

I am a Master's student with the Department of Health Studies at the University of South Africa (UNISA). I am seeking permission to utilize your institution to conduct a research study investigating **factors contributing to nurses' poor utilization of HIV-related post exposure prophylaxis at a selected region in Swaziland.**

To meet the study objectives, I have to request nurses to complete a self-administered questionnaire which will take approximately 30-45 minutes of their time. The researcher will by all means ascertain anonymity and confidentiality of the information provided.

The study has been granted ethical approval by the Departmental Research Ethics Committee, UNISA and I am attaching the approved proposal for your consideration. Upon completion of the study, I undertake to provide your office with a summary of the research report upon request. Should you require any further information, please do not hesitate to contact me or my supervisor. Our contact details are as follows:

Student researcher: Nokthula Patience Dlamini
+268-76072706
email patiencenh@gmail.com

Supervisor: Dr F.H Mfidi
+2712 429 6731
Email - Mfidifh@unisa.ac.za

I hope that my request shall meet the required standards for approval by you and looking forward to hear from you soon.

Yours faithfully
……..
Nokthula Patience Dlamini

P.O. Box 1424
Mbabane

13 June 2017

Matrons
Mbabane Public Health Unit
P. O. Box 1119
Mbabane

Dear Madam

Re-Request for permission to conduct a Research study

I am a Master's student with the Department of Health Studies at the University of South Africa (UNISA). I am seeking permission to utilize your institution to conduct a research study investigating **factors contributing to nurses' poor utilization of HIV-related post exposure prophylaxis at a selected region in Swaziland.**

To meet the study objectives, I have to request nurses to complete a self-administered questionnaire which will take approximately 30-45 minutes of their time. The researcher will by all means ascertain anonymity and confidentiality of the information provided.

The study has been granted ethical approval by the Departmental Research Ethics Committee, UNISA and I am attaching the approved proposal for your consideration. Upon completion of the study, I undertake to provide your office with a summary of the research report upon request. Should you require any further information, please do not hesitate to contact me or my supervisor. Our contact details are as follows:

Student researcher: Nokthula Patience Dlamini

+268-76072706
email patiencenh@gmail.com

Supervisor: Dr F.H Mfidi
+2712 429 6731
Email - Mfidifh@unisa.ac.za

I hope that my request shall meet the required standards for approval by you and looking forward to hear from you soon.

Yours faithfully

……..

Nokthula Patience Dlamini

P.O Box 1424
Mbabane

20 April 2017

The Chairperson
The National Health Research Review Board
P.O. Box 5
Mbabane
Swaziland

Dear Sir / Madam,

Re-Request for permission to conduct a research study

I am a Master's student with the Department of Health Studies at the University of South Africa (UNISA). I am seeking permission to utilize the public hospital (Mbabane Government Hospital) and Mbabane Public Health Unit of one region in Swaziland to conduct a study to investigate **factors contributing to nurses' poor utilization of HIV-related post exposure prophylaxis at a selected region in Swaziland.**

To meet the study objectives, I have to request nurses in the public hospital and in the public health clinic to complete a self-administered questionnaire which will take approximately 30-45minutes of their time. The researcher will by all means ascertain anonymity and confidentiality of the information provided. The proposed study falls within the priority areas of the National Health Research Agenda under the section of communicable diseases, HIV/AIDS category.

The study has been granted ethical approval by the Departmental Research Ethics Committee, UNISA and I am attaching the approved proposal for your consideration.

Upon completion of the study, I undertake to provide your office with a summary of the research report upon request. Should you require any further information, please do not hesitate to contact me or my supervisor. Our contact details are as follows:

Student researcher: Nokthula Patience Dlamini
+268-76072706
email patiencenh@gmail.com

Supervisor: Dr F.H Mfidi
+2712 429 6731
Email - Mfidifh@unisa.ac.za

I hope that my request shall meet the required standards for approval by you and looking forward to hear from you soon.

Yours faithfully

……..

Nokthula Patience Dlamini

ANNEXURE C

ETHICAL CLEARANCE FROM THE SWAZILAND SCIENTIFIC AND ETHICS COMMITTEE

Research Protocol clearance certificate

Type of review	Expedited	X		Full Board			
Name of Organization	**STUDENT**						
Title of study	**FACTORS CONTRIBUTING TO NURSES' POOR UTILIZATION OF HIV RELATED POST EXPOSURE PROPHYLAXIS AT A SELECTED REGION IN SWAZILAND.**						
Protocol version	**1.0**						
Nature of protocol	New	X		Amendment			
List of study sites	**MBABANE GOVERNMENT HOSPITAL**						
Name of Principal Investigator	**PATIENCE NOKUTHULA DLAMINI**						
Names of Co- Investigators	**N/A**						
Names of steering committee members in the case of clinical trials	**N/A**						
Names of Data and Safety Committee members in the case of clinical trials	**N/A**						
Level of risk (Tick appropriate box)	Minimal			High			
	X						
Clearance status (Tick appropriate box)	Approved	X		Disapproved			
Clearance validity period	Start date	**14/06/2017**		End date	**14/06/2018**		
Signature of Chairperson							
Date of signing	**15/06/2017**						
Secretariat Contact Details	Name of contact officers	**Ms Simangele Masilela**					
	Email address	kaluamasi@gmail.com					
	Telephone no.	**(00268) 24040865/24044905**					

MINISTRY OF HEALTH
15 JUN 2017
HEALTH RESEARCH REVIEW BOARD
SWAZILAND

APPROVAL CONDITIONS

Ref.	Conditions	Indication of conditions (tick appropriate box)				
1	Implementation of approved version of protocol	✓				
2	Reporting of adverse events within 5 days of occurrence	✓				
3	Submission of progress reporting for multi-year studies	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5
		N/A	N/A	N/A	N/A	N/A
4	Submission of end of project report (Hard copy)	✓				
5	Submission of end of project report (Soft copy)	✓				
6	Submission of data sets	✓				

List of reviewed documents

Ref.	Documents	Reviewed documents (tick appropriate box)
1	Completed application form	✓
2	Cover letter	✓
3	Evidence of administrative permission to conduct the research by involved institutions/sites (where applicable)	✓
4	Detailed current resume or curriculum vitae of Principal Investigator/s including Principal investigators declaration	✓
5	Summary resume or biography for other investigator(s)	✓
6	Evidence of approval/rejection by other Ethics Committees, including comments and requested alterations to the protocol, where appropriate.	
7	Research protocol (see outline in Annex 1)	✓
8	Questionnaires and interview guides (with back-translated versions where applicable)	✓
9	Case report forms (CRFs), abstraction forms and other data collection tools	✓
10	Participant/subjects Information Statement(s) (where applicable)	✓
11	Informed consent form(s) including photographic and electronic media consent statements.	✓
12	Advertisements relevant to the study (where applicable)	
13	Source of funding and detailed budget breakdown including material and incentives to participants if applicable	
14	Notification form for adverse effects/events.	
15	Proof of payment	✓
16	Proof of insurance cover for research subjects in clinical trials or where applicable	
17	Any other special requirements should be stated, if applicable	None

ANNEXURE D

PERMISSION FROM THE STUDY SITE TO CONDUCT RESEARCH

Telegrams:
Telex:
Telephone: (+268 2411 8000)
Fax: (+268 2404 6471)

Mbabane Government Hospital
P.O. BOX 8
MBABANE
SWAZILAND

THE KINGDOM OF SWAZILAND

23 JUNE 2017

Ms Patience Nokuthula Dlamini

Principal Investigator

Mbabane

Dear Patience,

RE: FACTORS CONTRIBUTING TO NURSES' POOR UTILIZATION OF HIV-RELATED POST EXPOSURE PROPHYLAXIS

This letter serves to inform you that management has granted you permission to undertake the above mentioned research study in the facility. You are expected to adhere to all the ethical considerations in the study.

We would very much appreciate if the findings and recommendations of the study can be communicated back to the facility (electronic and hard copy).

Wishing you all the best in your study.

Yours sincerely

Mkhonta

MATRON T. MKHONTA (Senior Matron)

FOR: HOSPITAL MANAGEMENT

MBABANE GOVERNMENT HOSPITAL
P.O. BOX 8
MBABANE H100
2017 -06- 23
MATRON 1
SWAZILAND

Telegrams:
Telex:
Telephone: (+268 24043506)
Fax:

Mbabane Public Health Unit
P O BOX 1119
Mbabane

SWAZILAND

THE KINGDOM OF SWAZILAND

09 August 2017

Miss P. N. Dlamini
Student : 5855 – 931 – 0

Dear Sir/Madam

RE: AUTHORIZATION TO CARRY OUT A RESEARCH STUDY.

P.N. Dlamini, who is a student at the University of South Africa – Department of Health Sciences is granted permission to conduct a study on **"Factors Contributing to Nurses' Poor Utilization of HIV Related Post Exposure Prophylaxis"** at the Mbabane Public Health Unit.

Thanking you in advance.

Yours faithfully

MINISTRY OF HEALTH
HLOHHO SOUTH CLINICS
02 AUG 2017
SUPERVISION
SWAZILAND

ZANELE CINDZI
IN – SERVICE CORRDINATOR

ANNEXURE E

PARTICIPANTS' INFORMED CONSENT FORM

Name of researcher **:** Patience Nokthula Dlamini

Student number **:** 58559310

Name of Supervisor **:** Dr F.H. Mfidi

Research Topic **: FACTORS CONTRIBUTING TO NURSES' POOR UTILIZATION OF HIV-RELATED POST EXPOSURE PROPHYLAXIS AT A SELECTED REGION IN SWAZILAND**

Dear Participant

My name is Patience Nokthula Dlamini, I am a Masters student in the Department of Health Studies at the University of South Africa (UNISA). I hereby invite you to participate in the research study entitled ***Factors Contributing to nurses' poor utilization of HIV-related Post Exposure Prophylaxis (PEP) at a selected region in Swaziland.***

Your participation

I am requesting you to take your time to complete a single self-administered questionnaire that is aimed at determining the reason why some of the nurses are reluctant to utilize HIV-related post exposure prophylaxis.

The objectives of the study are:

- To explore and describe the attitudes of nurses towards the utilization of HIV-related post exposure prophylaxis.
- To determine the nurses' knowledge about HIV-related post exposure prophylaxis.
- To explore factors contributing to poor utilization of HIV-related post exposure prophylaxis by nurses.

The questionnaire will take about 30-45 minutes. Please note that participation is voluntary and withdrawal can be done at any time without you incurring any penalties.

Confidentiality

Any records from the study will be kept confidential to the extent possible by law. The records will be reviewed by people responsible for making sure that the study is done properly including members of the research ethics committee at UNISA. All of these people are required to keep every information/ records confidential.

Ethics

The information you provided will be kept in a locked file cabinet and will not be available to others. We will refer to you by a code number in any of the records that will be retained within the study. The results of this study may be included as part of a thesis, used for presentation in conferences and published in scientific journals. Your name will not be mentioned in any of these documents.

Risks/discomforts

This study will not involve any invasive interventions and we do not expect any reportable discomforts. Should there be a need for access to a therapist to debrief you; this will be availed to you.

Benefits

There are no immediate benefits to you from participating in this study. However, this study will be extremely helpful to promote an understanding of the contributing factors to poor utilization of PEP by nurses and thus assist in the improvement of programmes for the promotion of staff wellbeing in the workplace.

Should you require any further information, please do not hesitate to contact me or my supervisor. Our contact details are as follows:

Student researcher: Nokuthula Patience Dlamini
+268-76072706
email patiencenh@gmail.com

Supervisor: Dr F.H Mfidi
+2712 429 6731
Email - Mfidifh@unisa.ac.za

Should you agree to participate, please complete and sign the consent document below.

Consent document:

I …… have read and understood the information entailed in the letter, requesting my consent to participate in this study entitled: **Factors contributing to nurses' poor utilization of HIV-related Post Exposure Prophylaxis (PEP) at a selected region in Swaziland**. I therefore affix my signature as proof that I have agreed to voluntary participation in the above mentioned study.

Signed at……..on this……day of……2017
Participant signature……
Researcher signature ……
Thanking you in anticipation.

ANNEXURE F SELF-ADMINISTERED QUESTIONNAIRE

Factors contributing to nurses' poor utilization of HIV-related Post Exposure Prophylaxis at a selected region in Swaziland

Participant's Number: ……..

Dear Participant,

Thank you for accepting to take part in completing this questionnaire. You are kindly requested to answer all questions below as per instruction given.

Instruction

Please put a tick (✓) in the box against the most applicable answer of your choice for the questions in all the sections.

Part A: Biographic data

1. In which age group do you belong?
    1. 20 – 29 Years..... ☐
    2. 30 – 39 Years..... ☐
    3. 40 – 49 Years..... ☐
    4. 50 – 59 Years..... ☐
    5. 60 Years and above..... ☐

2. What is your gender?

1. Male..... ☐
2. Female..... ☐

3. What are your qualifications in nursing?

1. Certificate (Nursing assistant)..... ☐
2. Diploma in General Nursing (Single Qualified)..... ☐
3. Diploma in General Nursing and Midwifery (Double Qualified)..... ☐
4. Undergraduate (Bachelor of Nursing science)..... ☐
5. Graduate (Master of Nursing Science)..... ☐

4. How long have you been practising as a nurse?
    1. 1-5 years..... ☐
    2. 6-10 years..... ☐

3. 11-12 years.....

4. 12 years and above.....

Part B: Knowledge about PEP

1. Have you heard of PEP?

1. Yes.....

2. No.....

2. From what source did you get the information?

1. Training.….....

2. Mass media.....

3. Friend.....

4. Journal.....

5. Other.....

3. When would you think PEP should be indicated?

1. Patient at high risk.....

2. Patient known with HIV.....

3. HIV with unknown.....

4. Any needle stick injury during work.....

4. What is the maximum time to delay the PEP?

1. 24hours.....

2. 48hours.....

3. 72hours.....

4. 12hours.....

5. Within an hour.....

5. What is preferable time to take PEP?

1. Within hour of exposure.....

2. After 6hours of exposure.....

3. After 12hours of exposure.....

6. What is the effectiveness of PEP?

1. 100%.....

2. 80-100%.....

3. 60-70%.....

4. 30-50%.....

5. 10-30%.....

7. What is the length of time to take PEP?

1. 28 days.....

2. 40days.....

3. 6 months.....

4. Lifetime.....

8. Have you attended any training about PEP?

1. Yes.....

2. No.....

9. Do you know about the PEP guidelines?

1. Yes.....

2. No.....

Part C: Attitude towards PEP

1. Do you think PEP is important?

1. Yes.....

2. No.....

3. I don't know…....

2. Do you believe that training of PEP is important for behavioural change?

1. Agree.....

2. Disagree.....

3. I am not sure….....

3. Do you think there should be PEP guidelines in work areas?

1. Agree.....

2. Disagree.....

3. I am not sure….....

4. Do you believe PEP reduce likelihood of being HIV positive?

1. Yes.....

2. No.....

3. I don't know….....

5. Do you believe PEP to prevent further infection?

1. Agree.....

2 Disagree.....

3. I am not sure…..

6. Do you see that PEP is indicated for any type of sharp injuries?

1. Agree.....

2. Disagree.....

3. I am not sure…..

7. What is your opinion on the belief that PEP is not important if the exposure is not with patient of known HIV positive?

1. Agree.....

2. Disagree.....

3. I am not sure…..

Part D: Preventive practices:

1. Does your organization develop and distribute written policies for the management of occupational exposure?

1. Yes.....

2. No.....

3. I don't know…..

2. Have you used personal protective equipment when anticipating contact with patient blood and body fluid?

1. Yes.....

2. No.....

3. I don't know…..

3. Is hand washing in your practice routine after contact with infected patients?

1. Yes.....

2. No.....

3. I don't know…..

4. Is there proper handling and disposing of sharp instrument before and after use?

1. Yes.....

2. No.....

3. I don't know…….....

5. Is PEP available in the unit?

1. Yes.....
2. No.....
3. I don't know/not sure.....

6. Have you ever sought PEP?

1. Yes, every time I needed it.....
2. Yes, some of the time I needed it.....
3. No, I have never sought it.....

7. If you have never sought PEP, did not seek it last time you needed it or sought it but somehow did not get it, what was the main reason for that?

1. Did not need it.....
2. Did not have enough information about PEP.....
3. Did not want to take the HIV test.....
4. PEP not available.....
5. Did not know where to go.....
6. Was afraid to go through the process.....

8. Have you ever been placed on HIV PEP after needle stick injury?

1. Yes.....
2. No.....
3. I don't know…….....

(Adapted from Singh, Ahmad, Muneer, Sabah, Baig & Khan 2015:4)